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**MISSION OPERATIONS AND DATA SYSTEMS DIRECTORATE**

**Earth Science  
Data and Information System (ESDIS)  
Level 1 Product Generation System (LPGS)  
User's Guide**

**August 1997**



National Aeronautics and  
Space Administration

Goddard Space Flight Center  
Greenbelt, Maryland

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# Earth Science Data and Information System (ESDIS) Level 1 Product Generation System (LPGS) User's Guide

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## **Preface**

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This document is under the control of the Level 1 Product Generation System (LPGS) Central Review Board (CRB).

Configuration change requests (CCRs) to this document, as well as supportive material justifying the proposed change, shall be submitted to the LPGS CRB. Changes to this document shall be made by document change notice (DCN) or by complete revision.

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## Abstract

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This document provides instructions for operating the Earth Science Data and Information System (ESDIS) Level 1 Product Generation System (LPGS). It instructs the novice user in the performance of specific LPGS operations and provides a detailed reference for the experienced user.

**Keywords:** *Earth Observing System Data and Information System (EOSDIS), Earth Resources Observation System (EROS), Earth Science Data and Information System (ESDIS), EDC Distributed Active Archive Center (EDC DAAC), EOSDIS Core System (ECS), EROS Data Center (EDC), Landsat 7, Level 1 Product (L1), Level 1 Product Generation System (LPGS), user's guide*

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## Section 1. Introduction

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### 1.1 Purpose and Scope

This document provides instructions for operating the Earth Science Data and Information System (ESDIS) Level 1 Product Generation System (LPGS). It guides the novice user through the execution of specific operations and provides a detailed reference for the experienced user.

This user's guide covers the following topics:

- Logging on to the LPGS system hosts
- Setting up the user environment
- Starting up and shutting down the LPGS software
- Navigating the LPGS graphical user interface (GUI)
- Monitoring LPGS status
- Performing basic operations with the LPGS
- LPGS troubleshooting and anomaly analysis
- Using LPGS utilities
- LPGS GUI menu options

This guide assumes the reader is familiar with point-and-click interfaces that use a mouse, buttons, pulldown menus, and dialogs (or forms) and with the fundamentals of interacting with one of the UNIX shells (csh or sh). This guide also assumes familiarity with LPGS standard operating procedures.

This guide does not provide instructions for third-party software such as Oracle's Database Management System (DBMS). The reader should consult vendor-supplied documentation for information concerning these tools. This guide also does not provide instructions for LPGS software maintenance.

### 1.2 Organization

This document contains 10 sections and 5 appendixes:

- Section 1, *Introduction*, provides an introduction to this document and an overview of the LPGS.
- Section 2, *Getting Started*, provides instructions for logging on to the LPGS, setting up an environment, starting up and shutting down the LPGS software, navigating the LPGS operations interface, and monitoring LPGS status.
- Section 3, *Automatic Level 1 Product Generation*, describes the LPGS functions that can execute without operator or analyst intervention.

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- Section 4, *Overrides of Automatic Level 1 Product Generation*, details the operator-specifiable parameters to control automatic Level 1 (L1) product generation.
- Section 5, *Quality Assessment*, provides instructions for performing visual quality assessment of LPGS intermediate and final products.
- Section 6, *Anomaly Analysis*, provides instructions for investigating LPGS anomalies and resolving trouble tickets.
- Section 7, *Report Generation*, provides instructions for generating LPGS reports.
- Section 8, *LPGS Testing*, provides instructions for performing LPGS built-in tests.
- Section 9, *LPGS Maintenance*, provides instructions for using assorted LPGS utility programs.
- Section 10, *LPGS GUI Menu Options*, provides a detailed explanation of all menu options in the LPGS GUI.
- Appendix A, *LPGS Error Messages*, describes all error messages output by the LPGS.
- Appendix B, *LPGS Directory Structure and Filename Formats*, explains the directory hierarchy on LPGS SGI Origin 2000 and the format of LPGS file names.
- Appendix C, *Process Catalog and Man Pages*, describes all LPGS processes.
- Appendix D, *Customizing Your Environment*, explains what environment variables are important for LPGS operations and how to customize their values.
- Appendix E, *Performing LPGS Functions Through IRIX*, explains how to execute LPGS programs and use IRIX and Oracle features to perform LPGS operations from an IRIX shell. Expert users can use this information to construct scripts that extend the capabilities of the LPGS.

The appendixes are followed by a list of abbreviations and acronyms, a glossary of terms, and a list of references used in this document.

## 1.3 LPGS Overview

This section describes the LPGS environment, functions of the LPGS, its hardware configuration, the components of its software, and the operator's role in LPGS operations.

### 1.3.1 Environment

The LPGS receives L1 product generation requests and distributes generated products to customers through the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS) at the Earth Resources Observation System (EROS) Data Center (EDC) on a first-ordered, first-processed basis.

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The LPGS is the responsibility of the ESDIS Project and is to be installed at the EDC Distributed Active Archive Center (DAAC) to provide product generation and distribution support for a Landsat 7 minimum mission life of 5 years.

The LPGS produces L1 data products in electronic format for partial Enhanced Thematic Mapper Plus (ETM+) subintervals [0.5 to 3 Worldwide Reference System (WRS) scene equivalents] based on customer requests. The LPGS can produce a daily volume of 25 WRS scene equivalents of L1 radiometrically corrected (L1R) or L1G, digitally resampled for geometric correction and geographic registration. The LPGS can create digital images projected to different coordinate reference systems for any subset of the eight spectral channels collected by the ETM+ instrument or in different output formats according to other options specified in the customer's request.

ECS User Services provides the interface that customers use to request Landsat 7 L1 products. The ECS supplies the LPGS with the customer requests in the form of product generation requests. A product generation request identifies the subinterval, the type of product (L1R or L1G), and various options used to control L1 processing. The ECS places product generation requests on a known ECS disk location for "just in time" processing. The LPGS periodically polls this location for new requests. When the LPGS finds a new request, it transfers the request to the LPGS disk and updates the LPGS database with the request information.

Before the LPGS can begin L1 processing, it must ingest the Level 0 radiometrically corrected (L0R) product needed for processing. The LPGS requests the L0R product from the ECS. The ECS subsets the L0R data, stores it on the ECS disk, and notifies the LPGS of the L0R product availability. The LPGS retrieves the L0R product from the ECS and verifies that the product is correct and complete.

After the L0R product needed for a product generation request has been ingested, the LPGS initiates L1 processing by creating an LPGS work order. A work order is an internal mechanism used to control and monitor the L1 processing. As a part of work order processing, the LPGS runs a number of UNIX scripts that perform the radiometric and geometric corrections, quality assessments, and product preparation. Each of the work order scripts has parameters associated with it. Many of the parameter values are determined by the customer-supplied options in the product generation request.

After the L1 product has been produced, the LPGS notifies the ECS that the product is ready for distribution. The LPGS creates an L1 product availability notice and places the notice in a known location on the LPGS disk. The ECS periodically polls this location for new product availability notices. When the ECS finds a new notice, it transfers the product to the ECS disk, performs its ingest function, and delivers the product to the customer.

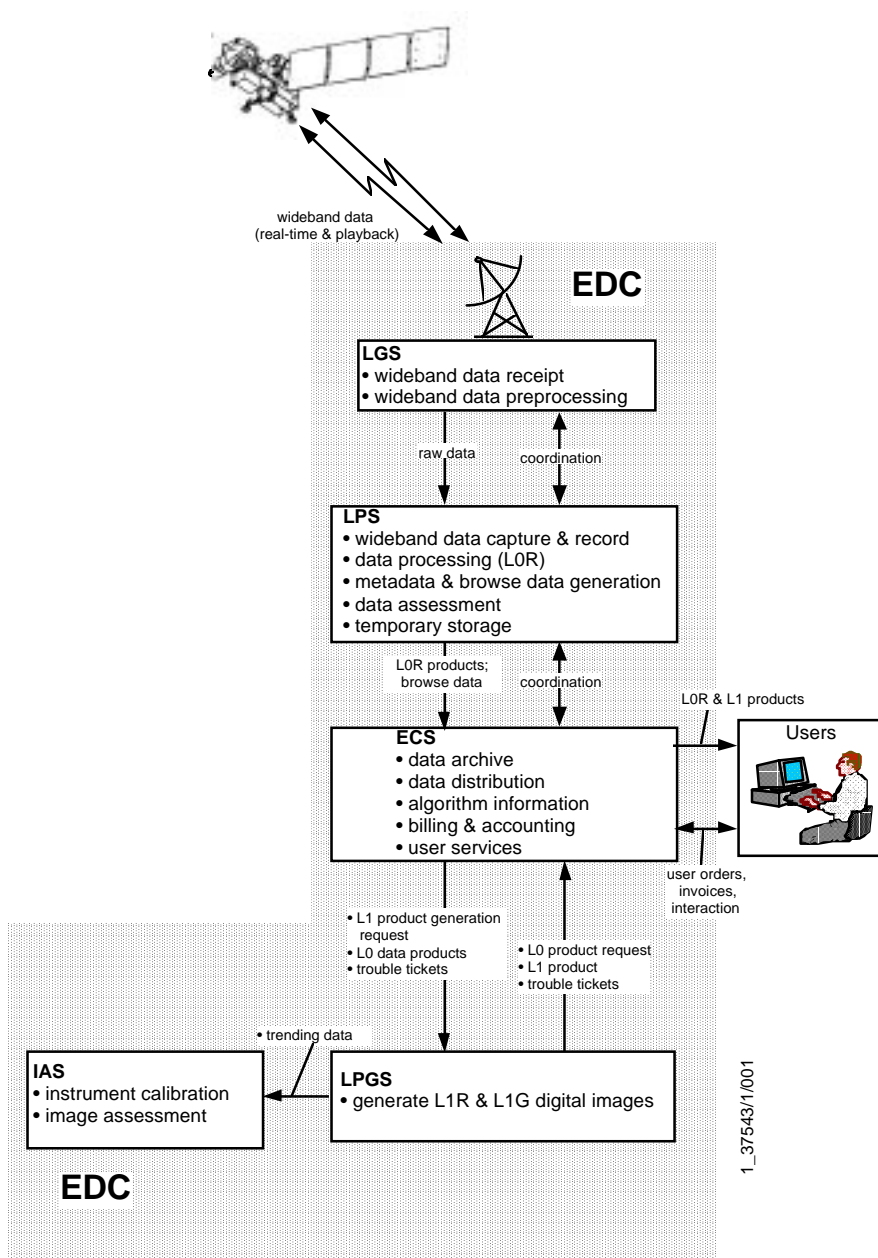
Trending data are stored in the LPGS database as a part of the work order processing. Because the Image Assessment System (IAS) processes fewer scenes than the LPGS, the IAS plans to use the LPGS trending data to augment the IAS trending data. The IAS periodically pulls the trending data from the LPGS database.

The LPGS interfaces with the ECS within the EDC DAAC and with the IAS. [Consult the appropriate system interface control document (ICD) for more information concerning a specific



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interface.] Figure 1-1 shows the elements of the Landsat 7 System that are important to LPGS operations.



**Figure 1-1. The LPGA Environment**

### 1.3.2 Functions

The LPGS's principal functions are receiving L1 product generation requests and associated data from the ECS, generating the requested L1 product, formatting the product as requested, and

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coordinating the transfer of the L1 product to the ECS. The following sections describe these functions in more detail.

### **1.3.2.1 Acquiring L0 Data Products From the ECS**

TBS

### **1.3.2.2 Generating L1 Products**

TBS

### **1.3.2.3 Transferring L1 Products to the ECS**

TBS

### **1.3.2.3 Delivering Radiometric Characterization Data to the IAS**

TBS

## **1.3.3 Hardware Configuration**

The LPGS hardware is located within the DAAC at the EDC in Sioux Falls, South Dakota. Figure 1-2 presents the LPGS architecture.

### **1.3.3.1 LPGS System Hardware**

The LPGS operations support system performs L1 processing, provides storage for the production control database, and provides temporary storage for ingesting incoming LOR products and outgoing L1 products. A backup system can be used, after proper configuration, as a production system if the prime system fails. The operations support system consists of one Silicon Graphics, Inc. (SGI) Origin 2000 server, one set of redundant array of inexpensive devices (RAID) disk arrays, two SGI 02 workstations, one X terminal, one 8-millimeter (mm) tape drive, and a network printer. Additional hardware includes an Origin 2000 server, an SGI 02 workstation, and an X terminal to be used for software maintenance and testing and also as a backup in case a failure occurs in the operations support system. Any of the three SGI 02 workstations and two X terminals can be configured to interface with either the operations support system or the backup system.

#### **1.3.3.1.1 SGI Origin Server**

The SGI Origin servers are multiprocessor systems designed for distributed computing environments. Their parallel architecture is based on a 1.2-gigabyte (GB)-per-second system bus and can support up to 256 GB of random access memory (RAM). It is a modular building block of processors, input/output (I/O), memory, system bandwidth, power supplies, and chassis. A single deskside system module supports 1 to 8 million instructions per second (MIPS) R10000s that can be rack mounted and expanded to 128 processors. The LPGS operations server initially will have four processors with 6 GB of RAM. Among the items included with the standard

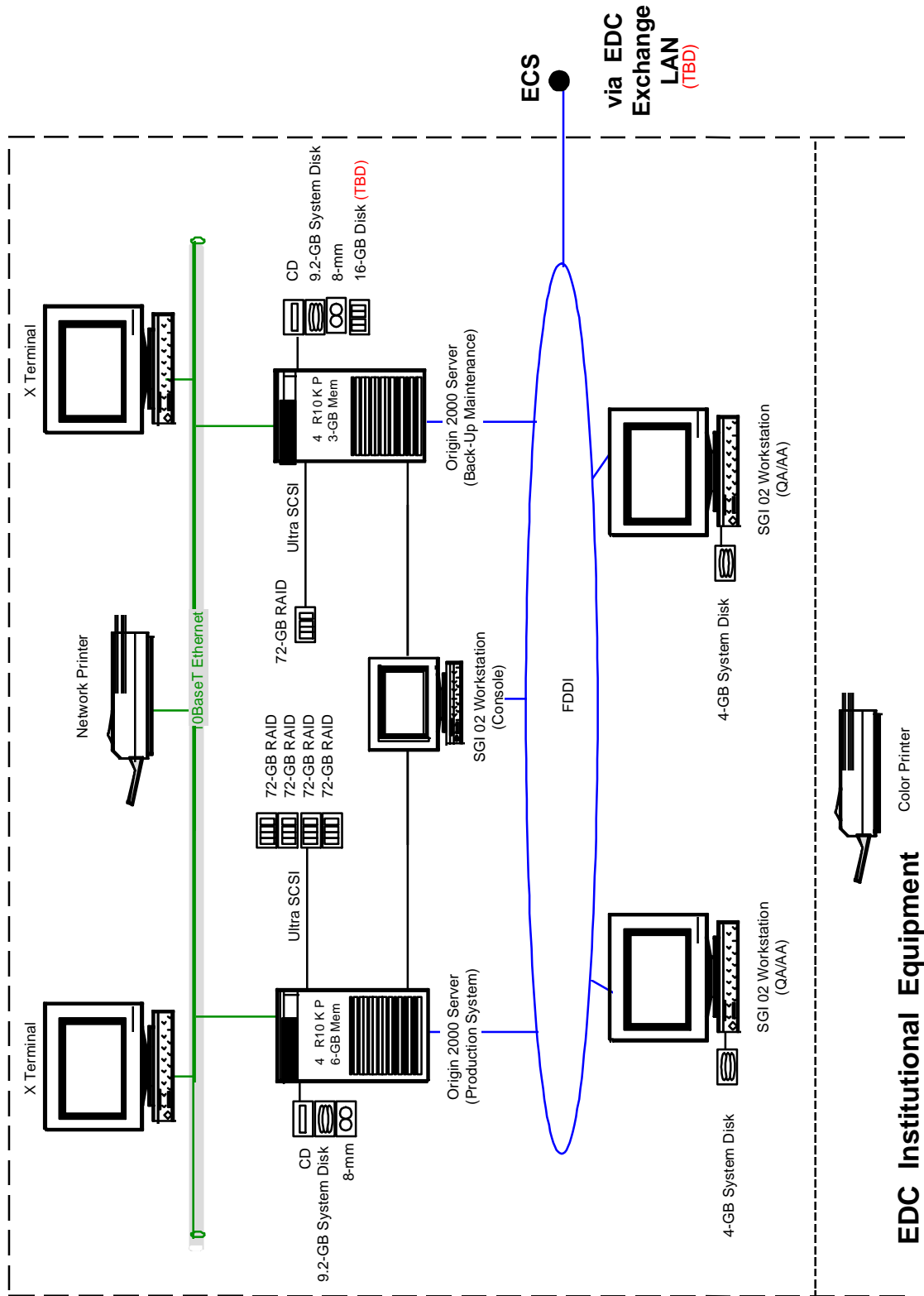


Figure 1-2. LPGS Hardware Architecture

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subsystem are an Ethernet controller, Versa Module European (VME/64) controller, multiple small computer system interface (SCSI) controllers, and parallel and serial ports. The operations server consists of a compact disc read-only memory (CD-ROM) drive, a 9.2-GB system disk, and an 8-mm tape drive. The second system, normally used for testing, will be identical to the operations server except it will have an additional 16 GB of system disk space for storing images and only 3 GB (instead of 6 GB) of RAM initially. There is a plan to increase the RAM for the backup system to 6 GB.

LPGS requires a multiprocessor solution to satisfy its computational requirements, which are beyond the current capacity of a single processor.

### **1.3.3.1.2 SGI 02 Workstation Hardware**

The SGI 02 workstations are based on the MIPS R10000 processor. These workstations are used by the LPGS analyst to perform quality assessment (QA) and anomaly analysis (AA).

Both of the QA/AA workstations are connected to the LPGS server via the fiber-optic data distribution interface (FDDI) local area network (LAN). The display resolution is 1280 x 1024. These workstations have a 4-GB disk and 64 megabytes (MB) of RAM.

### **1.3.3.1.3 X Terminals**

The hardware configuration consists of two X terminals. These terminals are used by the LPGS operators to monitor and control processing on the operations and test systems. The terminals are connected to the Origin 2000 server via the Ethernet LAN.

### **1.3.3.1.4 FDDI LAN**

The FDDI LAN connects the operations support and backup systems with the EDC DAAC. The LAN is rated at 100 megabits per second (Mbps).

### **1.3.3.1.5 SCSI Controllers**

The SCSI 2 controller is used to connect to the CD-ROM, system disk, and 8-mm tape drive. Multiple Ultra-SCSI controllers are used to connect to the RAID array to get better disk I/O performance.

### **1.3.3.1.6 RAID Array**

Ciprico 6900 series of disk arrays supports Ultra-SCSI interface at 40 megabytes per second (MBps). It has a capacity of up to 72 GB per array. Five disk arrays giving a total of 360 GB of storage were selected for storing images and associated data. Initially, four disk arrays will be configured for the operations system, and one disk array will be configured for the backup system.

## 1.3.4 Software Components

The LPGS is composed of six major subsystems: the Data Management Subsystem (DMS), Process Control Subsystem (PCS), Radiometric Processing Subsystem (RPS), Geometric Processing Subsystem (GPS), Quality Assessment Subsystem (QAS), and Anomaly Analysis Subsystem (AAS). Only the DMS maintains an external interface.

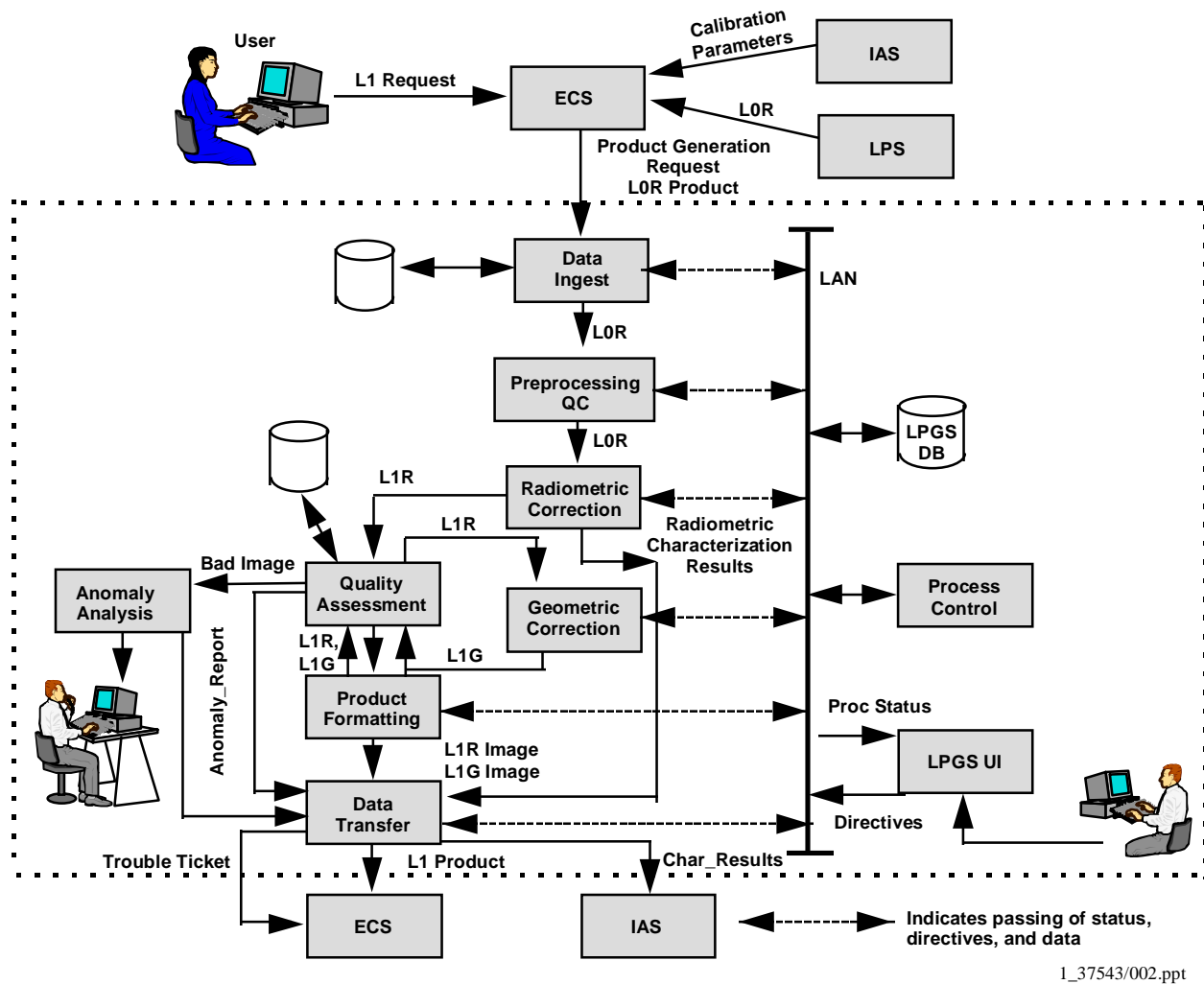
The following paragraphs describe the purpose and function of each LPGS subsystem.

- **Data Management Subsystem**—The DMS maintains and provides access to LPGS data stores. The DMS handles communication protocols with LPGS external interfaces and ingests and formats files for use by other LPGS subsystems, providing cursory quality checks where needed. The DMS provides formatting and packaging of L1 output and makes these data available to external systems. The DMS also maintains LPGS disk space, populating temporary storage with data from ingested files and periodically deleting files marked for deletion.
- **Process Control Subsystem**—The PCS controls LPGS production planning and processing. The PCS takes product generation requests and sets up, monitors the status of, and controls processing of LPGS work orders. The PCS manages and monitors LPGS resources and provides processing status in response to operator requests.
- **Radiometric Processing Subsystem**—The RPS converts the brightness of the L0R image pixels to absolute radiance in response to user requests and in preparation for geometric correction. The RPS performs radiometric characterization of L0R images by locating radiometric artifacts in images. The RPS provides the results of the characterizations performed and the processing status for use by external elements and other LPGS subsystems. The RPS uses applicable algorithms to correct for the radiometric artifacts found, then converts the image to absolute radiance by using internal calibrator data.
- **Geometric Processing Subsystem**—The GPS creates systematically corrected L1G imagery from L1R products. The GPS provides the results of the characterizations performed and the processing status for use by external elements and other LPGS subsystems. The GPS prepares a resampling grid, re-creates the L1R image within the grid, and applies one of three optional resampling techniques. The GPS performs sophisticated satellite geometric correction to create the image according to the user-specified map projection and orientation.
- **Quality Assessment Subsystem**—The QAS generates and assembles postproduction information about image artifacts and effects that were not corrected, and it produces a summary of the processed image quality. The QAS performs automated QA after radiometric and geometric correction of the images. The QAS provides tools for visual inspection of images after radiometric correction, geometric correction, and final product formatting.
- **Anomaly Analysis Subsystem**—The AAS analyzes L1 images and associated postproduction information about image artifacts and effects to resolve image

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production anomalies. For problems that are not within the scope of resolution by the LPGS, the AAS provides results of such problem analysis to the ECS for further investigation.

Figure 1-3 illustrates the LPGS processing flow and subsystem interaction.



**Figure 1-3. LPGS Processing Flow and Subsystem Interaction**

A majority of the LPGS processing is performed by background tasks that normally require no operator interaction. However, there are tasks invoked via the GUI that are initiated by the operator and communicate with the background tasks.

### 1.3.5 LPGS Roles

The operations staff is required to perform activities that the LPGS subsystems do not perform automatically. The LPGS defines three operational roles that operations staff members may

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assume. The operational roles are system operator (Sys Opr), production operator (Prod Opr), and analyst. Each operational role is assigned separate and distinct activities. However, a single operations staff member can support multiple operational roles, and multiple staff members can support a single role as permitted by the hardware architecture. Activities associated with each role can be grouped into

- System operations
- Production control
- Quality assessment
- Anomaly analysis
- Test and maintenance

The following subsections describe the activities associated with each of these groups.

### **1.3.5.1 System Operations**

System operations, performed by the Sys Opr, include initiating system start up and shut down, configuring system software and hardware, backing up system software in support of both nominal and contingency operations, and monitoring system status.

### **1.3.5.2 Production Control**

Production control, performed by the Prod Opr, includes managing L1 processing queues, manually modifying LPGS work orders, initiating statistics generation, and deleting characterization results.

### **1.3.5.3 Quality Assessment and Anomaly Analysis**

QA and AA activities are performed by the analyst. The analyst visually inspects images before distribution, analyzes and inspects processing quality information, and resolves processing anomalies found both before and after distribution of the L1 product.

### **1.3.5.4 Test and Maintenance**

In addition to normal LPGS operations, the LPGS operator uses LPGS software to test LPGS functions.

## **1.4 Notational Conventions**

This user's guide uses various text styles for different categories of terms. Table 1-1 describes these conventions.

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**Table 1-1. Text Style Conventions**

Text Style	Description
<b>System&gt;Configure LPGS ...</b>	Menu items you select from the LPGS GUI menu bar or other system menus are shown boldface in Arial font. The example shows the top-level menu name, the symbol ">", and the menu option. Pull-right menus may have additional entries. For example, <b>System&gt;Configure LPGS...&gt;System Parm...</b> indicates the <b>System Parm...</b> menu option is in the <b>Configure LPGS...</b> pull-right menu, which is itself under the <b>System</b> menu.
% cat /etc/passwd \ ? > savefile	Any text that you would type as an IRIX shell command appears in Courier font. "%" represents the IRIX command prompt, and "?" represents the IRIX continuation prompt. DO NOT type % and ? when they appear in these positions.  In this document, commands sometimes are split to accommodate the document's format. You can omit the continuation and type the entire command on a single line.
SQL> SELECT * 2 FROM rdc_acct 3 WHERE csid = 123;	Any text that you would type as input to Oracle SQL*Plus appears in Courier font. Structured Query Language (SQL) keywords appear in uppercase. Table and attribute names appear in lowercase. "SQL" represents the SQL*Plus command prompt. "2" and "3" represent the SQL*Plus continuation prompt. DO NOT type them when they appear in these positions.  In this document, commands sometimes are split to accommodate the document's format. You can omit the continuation and type the entire command on a single line.
% telnet <i>String-Name</i>	Italicized text indicates an item, such as a filename, that you must supply.
% mac_startLOR [0   1]	Items in square brackets separated by " " indicate a set of options. Type one (and only one) of the options exactly as it appears.

Warnings and notes appear throughout this users guide. Warnings alert the user to potentially destructive or hazardous actions. For example,

## WARNING

Selecting "Commit" will overwrite the value in the database. The original value cannot be recovered.

Notes provide points of useful information. For example,

**NOTE:** When logging on to LPGS from an X terminal, a UNIX command window is displayed allowing you to enter UNIX commands.



## Section 2. Getting Started

---

### 2.1 Introduction

This chapter describes the fundamentals of operating the LPGS software. It explains the steps required to

- Log on to the LPGS
- Set up an environment to run the LPGS software
- Start up and shut down the LPGS software
- Navigate the LPGS GUI
- Monitor the LPGS status
- Browse the LPGS event log to view status and error history

### 2.2 Logging On to the LPGS

If you do not already have an account on the LPGS system host, contact the LPGS system administrator. Be sure to tell the system administrator that your account must be an LPGS operator account. The system administrator will provide your user name and initial password.

Once you have a user name and password, you can log on to the LPGS. To log on to the LPGS from a workstation, execute the following steps:

Step	Subsystem/Operator	Action
1	Sys Opr	Power on/boot the workstation
2	Sys Opr	Type your user name and then press return
3	Sys Opr	Type your password (your password is not echoed on the screen) and then press return

### 2.3 Setting Up the Environment

This section provides information on how you can customize the LPGS environment. The remainder of this section is TBD.

### 2.4 Starting Up the LPGS Software

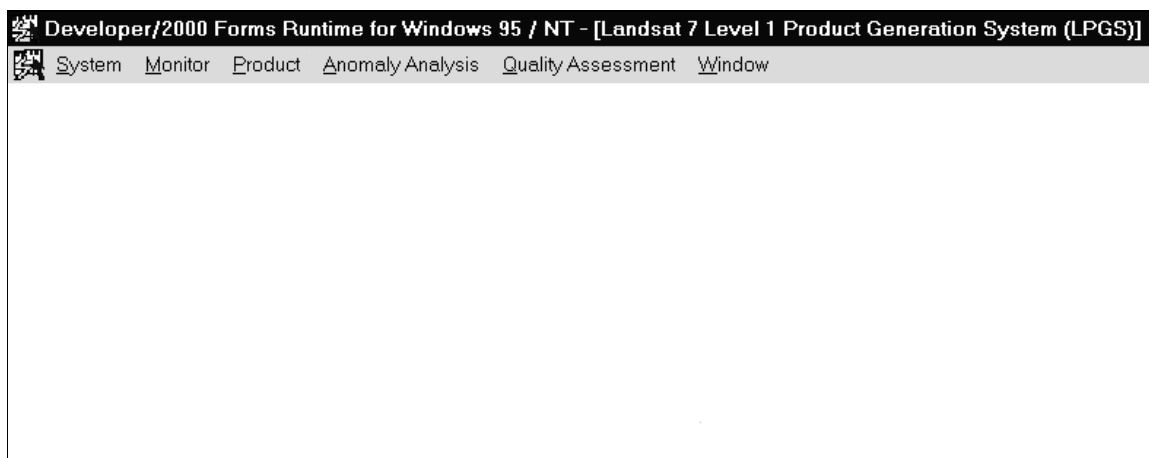
LPGS start up activities are performed to boot and power on LPGS hardware, initialize the LPGS user interface, and initiate optional periodic monitoring activities. The following summarizes the information that will eventually be in this section.

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Step	Subsystem/Operator	Action
1	Sys Opr	Start Oracle DBMS
2	Sys Opr	Start up LPGS user interface
3	Sys Opr	Select option to start tasks
4	PCS	Start up LPGS background tasks
5	Prod Opr	Display LPGS event log
6	Analyst	Log onto QA/AA workstation
7	Analyst	Display anomaly main window
8	Analyst	Display anomalies table

## 2.5 Navigating the LPGS GUI

You control the LPGS through the LPGS software GUI. The LPGS GUI menu bar is shown in Figure 2-1.



**Figure 2-1. LPGS GUI Menu Bar**

To issue a command through the LPGS GUI, execute the following steps:

Step	Subsystem/Operator	Action
1	Sys Opr	Hold down the left mouse button over the desired menu item
2	Sys Opr	While holding down the mouse button, move the cursor to highlight the selection you want to invoke
3	Sys Opr	Release the mouse button

In most cases, a dialog form will appear asking you to confirm your selection and possibly asking for further information. Details for each command accessible through the LPGS GUI and instructions for providing any further information appear in Section 10.

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### 2.6 Monitoring LPGS Status

All of the LPGS software writes status and error messages to an LPGS event log. You monitor LPGS operations by reviewing the messages sent to the LPGS event log. A status/error message display window is set up automatically when the GUI is initialized and remains displayed unless manually minimized or closed. You can also browse the LPGS event log to review LPGS processing history.

#### 2.6.1 Setting Up Message Displays

If you manually close the LPGS event log display, it can be reestablished. To reestablish the LPGS event log display, execute the following steps:

Step	Subsystem/Operator	Action
1	Sys Opr	Select <b>Monitor</b> from the LPGS menu bar
2	Sys Opr	While holding down the mouse button, move the cursor to <b>View Event Log</b>

#### 2.6.2 Browsing the LPGS Event Log

To browse the LPGS error log,

TBD

### 2.7 Shutting Down the LPGS Software

LPGS shut down activities are performed to take LPGS hardware off line and terminate all software processes. The Start Up LPGS activities must be performed prior to the Shut Down LPGS activities. The following summarizes the information that will eventually be in this section.

Step	Subsystem/Operator	Action
1	Sys Opr	Display LPGS user interface
2	Sys Opr	Display LPGS event log
3	Prod Opr	Select <b>Terminate Tasks</b> option from menu
4	PCS/DMS/QAS	Terminate current processing
5	Analyst	Exit anomaly windows and log off QA/AA workstation
6	Sys Opr	Exit LPGS user interface
7	Sys Opr	Terminate Oracle DBMS
8	Sys Opr	Log off operator workstation
9	Sys Opr	Power off workstations and monitors

## Section 3. Automatic Level 1 Product Generation

---

### 3.1 Introduction

This section describes the LPGS functions for automatic L1 product generation, which can execute without operator or analyst intervention. It describes how the LPGS automatically

- Ingests data
- Generates an L1 product
- Distributes the L1 product
- Manages disk space
- Reports errors

**NOTE:** The steps given below are numbered consecutively throughout the section.

### 3.2 Data Ingest

The LPGS is capable of automatically ingesting the information needed to produce an L1 product. The LPGS automatically executes the following steps:

Step	Subsystem/Operator	Action
1	DMS	Poll ECS server for new L1 product generation request
2	DMS	Detect new L1 product generation request
3	DMS	Retrieve and process L1 product generation request
4	DMS	Send L1 product generation response to ECS via ftp
5	DMS	Store information from L1 product generation request in LPGS database
6	DMS	Assess system ingest criteria for L0R product and indicate whether ingest criteria are satisfied
7	DMS	Identify next product generation request that needs L0R data
8	DMS	Create product request directory
9	DMS	Send start session message to ECS to establish TCP/IP socket connection
10	DMS	Receive start session acknowledgment from ECS indicating successful connection
11	DMS	Send L0R data request to ECS
12	DMS	Receive L0R data request acknowledgment from ECS
13	DMS	Send close session message to terminate TCP/IP socket connection
14	(ECS)	Stage L0R product on ECS disk space
15	(ECS)	Send L0R data availability notice to LPGS via ftp
16	DMS	Poll for new L0R data availability notice

## DRAFT

Step	Subsystem/Operator	Action
17	DMS	Detect new L0R data availability notice
18	DMS	Retrieve and process L0R data availability notice
19	DMS	Send L0R data availability acknowledgment to ECS via ftp
20	DMS	Create product request directories
21	DMS	Retrieve L0R product from ECS via ftp
22	DMS	Verify that correct L0R product files were received
23	DMS	Catalog L0R product files in database
24	DMS	Send L0R data delivery notice to ECS via ftp
25	(ECS)	Send L0R data delivery acknowledgment to LPGS via ftp
26	DMS	Poll for new L0R data delivery acknowledgment
27	DMS	Detect new L0R data delivery acknowledgment
28	DMS	Retrieve and process L0R data delivery acknowledgment
29	DMS	Update database to indicate that ingest has completed for product generation request
30	PCS	Poll database for product generation requests ready for work order processing (L0R ingest completed)
31	PCS	Detect new product generation request ready for work order processing
32	PCS	Generate work order for product generation request. Determine which procedure to use. The procedure identifies the sequence of scripts to run. Determine script parameter values by overriding default values with information provided in product generation request
33	PCS	Create work order directory
34	PCS	Assess resource availability and start work order processing when adequate resources are available
35	PCS	Set up L0R product processing script parameters
36	PCS	Start L0R product processing script
37	DMS	Check data accuracy and generate L0R statistics and consensus PCD and MSCD files
38	DMS	Update database with results
39	PCS	Assess L0R product processing script status and determine that processing continues

### 3.3 Level 1 Product Generation

The LPGS is capable of generating an L1 product without operator intervention. The LPGS automatically executes the following steps:

Step	Subsystem/Operator	Action
40	PCS	Set up L1R processing script parameters
41	PCS	Start L1R processing script
42	RPS	Perform radiometric characterization and correction

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Step	Subsystem/Operator	Action
43	RPS	Update database with results
44	PCS	Assess L1R processing script status and determine that processing continues
45	PCS	Set up L1R quality assessment script parameters (including thresholds)
46	PCS	Start L1R quality assessment script
47	QAS	Assess results of radiometric characterization and correction
48	QAS	Update database with L1R quality assessment results
49	PCS	Assess L1R quality assessment script status to determine that processing continues
50	PCS	Set up L1G processing script parameters
51	PCS	Start L1G processing script
52	GPS	Perform geometric correction
53	GPS	Update database with results
54	PCS	Assess L1G processing script status and determine that processing continues
55	PCS	Set up L1G quality assessment script
56	PCS	Start L1G quality assessment script
57	QAS	Assess results of geometric correction
58	QAS	Update database with L1G quality assessment results
59	PCS	Assess L1G quality assessment script status to determine that processing continues
60	PCS	Set up formatting script parameters
61	PCS	Start formatting script
62	DMS	Format L1G product
63	DMS	Package L1G product
64	DMS	Move product to L1 delivery directory
65	DMS	Check product in L1 delivery directory for completeness
66	PCS	Assess formatting script status to determine that processing continues
67	PCS	Update database to indicate that L1 product is ready for shipment to ECS

### 3.4 Level 1 Product Distribution

The LPGS is capable of automatically distributing the L1 product to the ECS for final disposition. The LPGS automatically executes the following steps:

Step	Subsystem/Operator	Action
68	DMS	Place L1 product availability notice in an LPGS directory that can be accessed by ECS
69	(ECS)	Poll for new L1 product availability notices

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Step	Subsystem/Operator	Action
70	(ECS)	Retrieve L1 product via ftp and perform ECS ingest functions
71	(ECS)	Send L1 product availability response to LPGS via ftp
72	DMS	Poll for L1 product availability response
73	DMS	Detect L1 product availability response
74	DMS	Retrieve and process L1 product availability response
75	DMS	Update LPGS database to indicate that L1 product has been delivered and product generation request is complete
76	DMS	Update deletion flag for product generation request to indicate that all files associated with request are eligible for deletion

### 3.5 Disk Space Management

The LPGS has an automatic disk space management task. This task periodically deletes product request and work order-associated files and directories that have been marked for deletion. In addition, this task can receive operator requests to delete product request and work order-associated data. After each deletion, the task updates the database to indicate that the files and directories are no longer available on the LPGS.

In addition to automatically deleting files, this task also monitors the amount of disk space available. If the amount of disk space available is less than a specified threshold, an error message is logged to the LPGS event log, and an error notification is sent to the operator. See Section 4.2 for a description of operator-specifiable disk management parameters.

### 3.6 Error Handling

The LPGS error handling philosophy provides for error detection by a monitoring and reporting process. Generally, each process that performs a function is invoked and monitored by a controlling process. The LPGS error handling philosophy distinguishes a number of classes of errors. A primary distinction is made between correctable and uncorrectable errors.

#### 3.6.1 Error Reporting

The LPGS error reporting consists of detailed error and status messages delivered throughout processing. Messages are reported to the event log, system log, and/or work order log, depending on the nature of the error. The event log is stored in the LPGS database. The system and work order logs are text files written to disk. The LPGS reports each detected error by the unit that first encounters the error.

Error and status messages requiring the user's (operator or analyst) attention are written to the LPGS event log. The user can query these events based on work order identifier, work order script, program name, time, message severity, or product request identifier.

Error and status messages requiring the LPGS software developer's attention are written to the LPGS system log. To aid in troubleshooting, the time, filename, process identifier, and the source code line number are appended to each message in the system log.

## **DRAFT**

Error and status messages encountered by radiometric and geometric processing software are written to the work order log. To aid in troubleshooting, the time, filename, process identifier, and the source code line number are appended to each message in the work order log.

### **3.6.2 Error Processing**

The LPGS design treats most errors as uncorrectable and terminates execution gracefully when this type of error occurs. This is intended to minimize development costs without impacting system requirements and is feasible because operations on the LPGS are repeatable.

#### **3.6.2.1 Correctable Errors**

In LPGS, a correctable error is reported and handled in the unit that detects the error.

#### **3.6.2.2 Uncorrectable Errors**

An uncorrectable error in the functioning process is detected by the monitoring process. In most cases, correction after a fatal error is unnecessary; the LPGS's state remains unchanged until the process terminates successfully.

Uncorrectable errors fall into two categories, fatal and nonfatal:

- Fatal errors—These errors cause a process to terminate abnormally and immediately. No opportunity for recovery exists at the time the error occurs. Catastrophic hardware failures or receipt of an operating system signal, such as UNIX SIGKILL, are events that can cause a process to terminate abnormally.
- Nonfatal errors—These errors make further processing impossible but do not cause the process to abort. The process is able to respond to the error at the time of its occurrence.



## Section 4. Overrides of Automatic Level 1 Product Generation

### 4.1 Introduction

This section describes the operator-specifiable parameters that control automatic L1 product generation. Provided in this section are the name of each parameter, its scope of influence, and its purpose.

### 4.2 Operator-Specifiable Parameters

Table 4-1 defines those parameters that the operator may modify to influence automatic processing.

**Table 4-1. Operator-Specifiable Parameters (1 of 2)**

Parameter Name	Scope	Description
CHECK_DISK_INTERVAL	DRM	Amount of time between checks of disk usage
DELETION_INTERVAL	DRM	Amount of time between cleanup of files marked for deletion
DAN_POLLING_PERIOD	DIL	Amount of time between queries of the DAN directory to determine if the requested LOR product has been placed in the staging area by ECS
DDA_POLLING_PERIOD	DIL	Amount of time between queries of the DDA directory to determine if ECS has received LPGS acknowledgment of LOR product receipt
LOR_RECEIPT_WAIT_PERIOD	DIL	Amount of time ECS has to stage LOR product
LOR_REQUEST_WAIT_PERIOD	DIL	Amount of time between requests for LOR products
MAX_CONCURRENT_WO	PWS	Maximum number of work orders that can be actively undergoing processing at one time
MAX_SCENES_INGESTED_PER_DAY	DIL	Maximum number of WRS scenes that can be ingested in a single day
MAX_STARTED_WO	PWS	Maximum number of work orders that can be started
MIN_DISK_SPACE_REQUIRED	PCS	Minimum amount of disk space that must be available before processing of a work order can begin
PAN_WAIT_PERIOD	DXL	Amount of time the task waits for ECS to return a product availability notice or PDRD file before timing out

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**Table 4-1. Operator-Specifiable Parameters (2 of 2)**

Parameter Name	Scope	Description
RAID_DISK_UTL_LIMIT_1	DRM	Percentage of RAID disk space available that, when met or exceeded, causes the generation of the first disk space warning
RAID_DISK_UTL_LIMIT_2	DRM	Percentage of RAID disk space available that, when met or exceeded, causes the generation of the second disk space warning
RESOURCE_MONITOR_INTERVAL	DRM	Amount of time between queries of LPGS to calculate system resource usage
SOCKET_RESPONSE_PERIOD	DIL	Amount of time the task waits for a response from ECS before timing out
STATS_RECORDING_INTERVAL	DGR	Period over which processing statistics are aggregated and written to the database
SYSTEM_DISK_UTL_LIMIT_1	DRM	Percentage of system disk space available that, when met or exceeded, causes the generation of the first disk space warning.
SYSTEM_DISK_UTL_LIMIT_2	DRM	Percentage of system disk space available that, when met or exceeded, causes the generation of the second disk space warning
TRENDING_DATA_DELETE_PERIOD	DGR	Amount of time between cleanup of trending data marked for deletion
TRENDING_DATA_RETENTION_PERIOD	DGR	Amount of time trending data are kept in the database before being deleted. Trending data entries that exceed this period are deleted even if they have not been retrieved by IAS
VISUAL_QA_FREQUENCY	PWG	Frequency of work orders to undergo visual QA (e.g., every 1 in 5)
WORK_ORDER_SCHEDULER_INTERVAL	PWS	Amount of time between checks for new work orders that need to be started or resumed
MAX_WO_GEN	PWS	Maximum number of work orders that can be generated at one time

## Section 5. Quality Assessment

### 5.1 Introduction

This section provides instructions for performing visual QA of LPGS intermediate and final products. It describes how the operator can

- View L1R or L1G digital image in Hierarchical Data Format (HDF), Geographic Tag(ged) Image File Format (GeoTIFF), and Fast Argonne System for Transport (Fast)-C format
- Approve/disapprove visual L1R or L1G image
- View L1R or L1G QA results
- Print L1R or L1G QA results
- Print L1R or L1G images

### 5.2 Viewing Images in L1R or L1G

QAS provides a commercial off-the-shelf (COTS) software package designed for analyzing remote sensing data and images in three format types: HDF, Geotiff, and Fast-C. When an L1R image has been requested by the customer, the operator can view the L1R product for approval for distribution. If an L1G product is requested, the image may be viewed by the operator either at the intermediate L1R stage or at the L1G stage for approval. The operator is prompted from two sources to view a specified work order—either a sampling of the work orders at a specified interval, for example, the first work order in each 10 work orders processed, or a message originated from QAS and passed via the database that indicates a threshold has been failed. Work order processing is paused temporarily while the operator views the image. When the Quality Assessment Subsystem button is selected on the main LPGS user interface (UI) page, a window menuing system in Oracle Forms allows the operator to select the **View L1R Image** or the **View L1G Image**. The **View L1G Image** will appear hazy and not sensitive to a button click if the final product requested is an L1R product. The number of the work order currently being processed pops up in an Oracle Forms display item. If the Disapprove Image button is selected, the operator is prompted an additional time before the image is disapproved. Disapproving the image in the QAS screen sets a flag alerting AAS that the image has failed visual inspection. Selecting the Approve Image button resumes PCS processing. Eventually, the capability will be added to allow the operator to select a given work order number and then bring up the image, rather than having to be prompted by the system.

Step	Subsystem/Operator	Action
1	PCS	Pause work order processing
2	Operator	Using window menus, open image viewing function
3	QAS UI	Work order number of image to view pops up
4	Operator	Check image for problems (e.g., excessive cloud cover, major frames missing, pixel noise, stripping, processor faults)

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Step	Subsystem/Operator	Action
5	Operator	Approve/disapprove image for processing to continue
6	Operator	Exit

### 5.3 Viewing/Printing QAS Results

The QAS Quality Report contains information and results from the automated QAS processes. When the Quality Assessment Subsystem button is selected on the main LPGS UI page, a window menuing system in Oracle Forms allows the operator to select the View Quality Report button. A similar scenario exists for the Print Quality Report button. When the View Quality Report button is clicked, the number of the work order currently being processed pops up in an Oracle Forms display item, and the operator can view the QAS results of the currently paused work order. When the Print Quality Report button is selected, the operator can print the QAS results for the currently paused work order.

Step	Subsystem/Operator	Action
1	Operator	Click View Quality Report button
2	UI	QAS report for currently paused work order pops up on screen
3	Operator	Select option to print report
4	UI	QAS report for currently paused work order is printed
5	Operator	Exit

### 5.4 Printing an L1R or L1G Image

The method of printing an L1R or L1G image is determined by the functionality of the COTS used for viewing the images.

## Section 6. Anomaly Analysis

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### 6.1 Introduction

This section provides instructions for investigating LPGS anomalies and resolving trouble tickets assigned to the LPGS.

### 6.2 Investigating LPGS Anomalies

This subsection describes how the analyst is notified that an anomaly has been encountered, as well as how to go about investigating and resolving an anomaly. Image anomalies may occur during routine L1 production processing. Anomalies may be detected during automated QA or via visual inspection of an image. After an anomaly is detected, a message is sent to the operator/analyst indicating that work order processing has failed. Following notification, the operator/analyst executes the following steps, which summarize the information that will eventually be in this section.

Step	Subsystem/Operator	Action
1	Analyst	Access the Work Order Information function to display the failed work order
2	Analyst/AAS	Access the Enter New Anomaly function to add new problem to anomalies table using the information available from the work order display
3		Access the View Event Log function to view the event log, the Product Request Information function to view the product generation request, and the Work Order Information function to view the work order
4	Analyst	Access the View Files function to view the work order log, metadata, and calibration files
5	Analyst	Access the View Image function to view the L0R and L1R images
6	Analyst	Develop plan for isolating the problem (in this case, suspect systematic problem)
7	Analyst/AAS	Access Generate Work Order function to generate a benchmark work order to verify that LPGS is working properly. Generate the work order directory
8	Analyst/AAS	Access Activate Work Order function to activate and promote the benchmark work order
9	LPGS	Run benchmark (starting from step 33 of nominal processing flow)
10	Analyst	Confirm that benchmark run is successful (localized problem rather than systematic)
11	Analyst/AAS	Access Generate Work Order function to create diagnostic work order to process the user request with AAS monitoring capabilities. Generate work order directory

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Step	Subsystem/Operator	Action
12	Analyst/AAS	Access Activate Work Order function to activate the diagnostic work order
13	LPGS	Run diagnostic work order (starting from step 33 of nominal processing flow)
14	Analyst	Monitor and control script processing
15	Analyst	Detect cause of problem that appears correctable; verify necessary processing modifications are documented in log
16	Analyst/AAS	Access Generate Work Order function to create the reprocessing work order with necessary corrections. Create work order directory
17	LPGS	Run reprocessing work order and deliver product
18	Analyst/AAS	Access Edit/Display Anomaly function to close out the anomaly and record the resolution in the anomalies table

### 6.3 Investigating Trouble Tickets

This subsection describes how the analyst receives and investigates problems reported via trouble tickets. Trouble tickets pertain to problems reported to the ECS by the customer and assigned to the LPGS for resolution. The following summarizes the information that will eventually be in this section.

Step	Subsystem/Operator	Action
1	Analyst/AAS	Receive notification, via e-mail or phone, that a trouble ticket has been assigned to LPGS. The notification gives the ID of the trouble ticket assigned to LPGS
2	Analyst/AAS	Access the ECS trouble ticket system and obtain detailed information concerning the trouble ticket. The trouble ticket identifies the product request ID associated with the product in question. The detailed information may also identify the location on the ECS disk of the returned product if it was returned
3	Analyst/AAS	Access the Enter New Anomaly function and enter trouble ticket into the anomalies table
4	Analyst/AAS	If the original output product was returned to ECS, the analyst manually transfers the file to LPGS using ftp. Once the file is transferred, the analyst can view the image via a UI function
5	Analyst/AAS	Access the View Image function through the UI menu to display the original image
6	Analyst/AAS	Access the View File function through the UI menu to check the metadata for errors
7	Analyst/AAS	Rerun the product request, using the UI function Generate Product Request, to generate a new product request. The new product request is based on the request used to generate the product in question

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Step	Subsystem/Operator	Action
8	Analyst/AAS	After the work order is generated automatically, access the Modify Work Order function to add pauses or change any parameters
9	Analyst/AAS	At an appropriate time, activate and promote the work order
10	Analyst/AAS	Monitor and control script processing
11	Analyst/AAS	Examine intermediate products to determine if the intermediate products are correct
12	Analyst/AAS	If additional runs are needed, access the Generate Work Order function via the UI to generate a diagnostic work order
13	Analyst/AAS	Repeat steps 9-12 until problem is resolved or is determined not to be an LPGS-related problem
14	Analyst/AAS	Determine source of problem and, if possible, make corrections to processing parameters
15	Analyst/AAS	Submit a final run to produce corrected image
16	Analyst/AAS	Access View/Edit Anomaly function to record resolution
17	Analyst/AAS	Access ECS trouble ticket system through Generate Response function and enter response to trouble ticket
18	Analyst/AAS	Manually delete image file provided in support of trouble ticket

## **Section 7. Report Generation**

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This section discusses the reports that may be generated through the LPGS GUI. The reports and their content are TBD.



## **Section 8. LPGS Testing**

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The LPGS will need to be tested to verify proper operation of the system. It also will be tested due to software changes and maintenance on hardware.

The method to test the system is to process an LOR that has been previously processed. The method of submitting and monitoring this benchmark run is TBD.

## **Section 9. LPGS Maintenance**

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### **9.1 Introduction**

This section explains how to perform routine LPGS maintenance activities. These activities may include backing up the LPGS database, purging the LPGS database of obsolete records, purging the LPGS event log, deleting unneeded anomaly files and saved reports, and deleting temporary files left after an abnormal LPGS process termination.

This section does not explain how to perform hardware and system software maintenance or hardware or software upgrades. It also does not include detailed instructions for recovering from catastrophic LPGS failures, such as system crashes.

The remainder of this section is TBD.

## Section 10. LPGS GUI Menu Options

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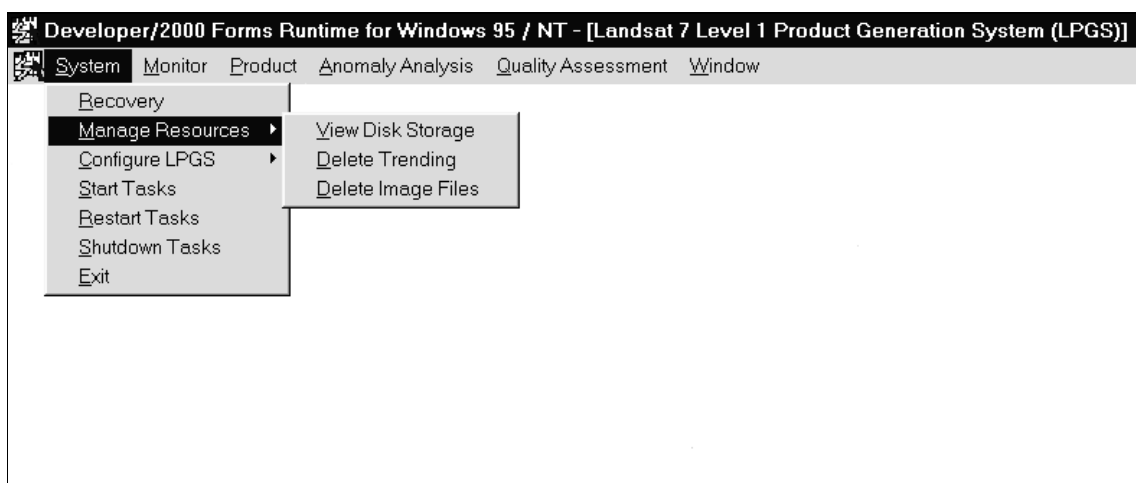
### 10.1 Introduction

This chapter explains each LPGS GUI command. Explanations are arranged according to the main menu's top-level pulldown menus. Figure 10-1 shows a view of the LPGS main menu bar. Each explanation includes description of what the menu option does, what additional information you may need to provide, what default values are used when you do not supply additional information, and explanations of any additional dialogs displayed by the LPGS GUI.

This chapter does not provide step-by-step explanations for performing LPGS procedures. To find out how to carry out a specific procedure, refer to Sections 3 through 9.

### 10.2 System Menu

The System Menu (Figure 10-1) contains commands to view or edit parameters that apply to the overall maintenance and operations of the LPGS system.



**Figure 10-1. Main, System, and Resources Menus**

#### 10.2.1 Recovery

Selecting this option brings up the Failed Process Resource Recovery screen (Figure 10-2). If the LPGS cannot automatically generate a L1 product and the Analyst cannot correct the problem with the product generation, the process is failed and the operator is notified of the failure. This screen provides the capability for the operator to recover the resources used by the failed process and initiate reprocessing. The operator enters, or selects from a list, the Product Request ID of

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the failed process and chooses one of three options for recovering the resources used by the failed process:

- Restore Product Request to initial state. Intermediate and work files are deleted and any input files which might have been modified are restored to as received contents.
- Restore Product Request to no data state. Intermediate, work, and input files are deleted. Input files will be re-requested and input from ECS.
- Delete all files and products associated with this Product Request. No additional processing will occur for this Product Request without operator intervention.

To perform the operation, select the COMMIT button, to bypass the operation select the CANCEL button.

Product Request I.D. of failed process

☒ Restore Product Request to initial data state. Image file contents restored to as received contents and all intermediate files and products deleted. (L1 processing will be restarted when this Product Request reaches the top of the processing queue)

☐ Restore Product Request to no data state. All LOR, intermediate files and products are deleted (LOR products for this Product Request will be retrieved from ECS when this Product Request reaches the top of the queue of files awaiting data)

☐ Delete all files and products associated with this Product Request (Operator intervention through the Anomaly Analysis System is required to reactivate this Product Request)

COMMIT CANCEL

Count: \*0 <insert>

**Figure 10-2. Failed Process Resource Recovery Menu**

### 10.2.2 Manage Resources

Selecting this option brings up a submenu with three options—View Disk Storage, Delete Trending, or Delete Image Files (Figure 10-1).

## DRAFT

### 10.2.2.1 View Disk Storage

Selecting this option allows the user to execute *ad hoc* displays of mass storage utilization using a UNIX shell.

### 10.2.2.2 Delete Trending Data

Selecting this option brings up the Manage Resources—Delete Trending Data screen (Figure 10-3). This screen provides the capability for the operator to effect immediate deletion of trending data collected by the LPGS associated with specific Product Requests. The operator can select any group of data not currently marked for deletion by clicking the button next to the Product Request ID and then click COMMIT to cause the selected trending data and the trending data marked for deletion to be immediately removed. Automatic processing deletes these files (for trending data retrieved by IAS) on a periodic basis. The CANCEL button bypasses the operation.

SYSTEM RESOURCES - DELETE TRENDING DATA

Trending Data Marked For Deletion

Trending Data NOT Marked For Deletion

- ☒ Product Request Trending
- ☐ Product Request Trending
- ☐ Product Request Trending
- ☐ Product Request Trending
- ☐ Product Request Trending
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- ☐ Product Request Trending
- ☐ Product Request Trending

Press button next to each product to be marked for deletion. When screen is committed, all files marked for deletion will be deleted.

COMMIT CANCEL

Count: 0 <Insert>

**Figure 10-3. Delete Trending Data Form**

### 10.2.2.3 Delete Image Files

Selecting this option brings up the Manage Resources—Delete Product Data screen (Figure 10-4). This screen provides the capability for the operator to effect immediate deletion

**DRAFT**

SYSTEM RESOURCES - DELETE PRODUCT DATA																																															
<p><u>Product Data Marked For Deletion</u></p> <table border="1"><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td></tr></table>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<p><u>Product Data NOT Marked For Deletion</u></p> <table border="1"><thead><tr><th><input checked="" type="checkbox"/> Product_Request_Data</th></tr></thead><tbody><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr><tr><td><input type="checkbox"/> Product_Request_Data</td></tr></tbody></table> <p><small>Press button next to each product to be marked for deletion. When screen is committed, all files marked for deletion will be deleted.</small></p> <p align="center"><input type="button" value="COMMIT"/><input type="button" value="CANCEL"/></p>	<input checked="" type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data	<input type="checkbox"/> Product_Request_Data
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**Figure 10-4. Delete Product Data Form**

of image products associated with specific Product Requests. The operator can select any group of product requests not currently marked for deletion by clicking the button next to the Product Request ID and then click COMMIT to cause the selected Product Requests and the Product Requests marked for deletion to be immediately removed. Automatic processing deletes these files (for products successfully transmitted to ECS) on a periodic basis. The CANCEL button bypasses the operation.

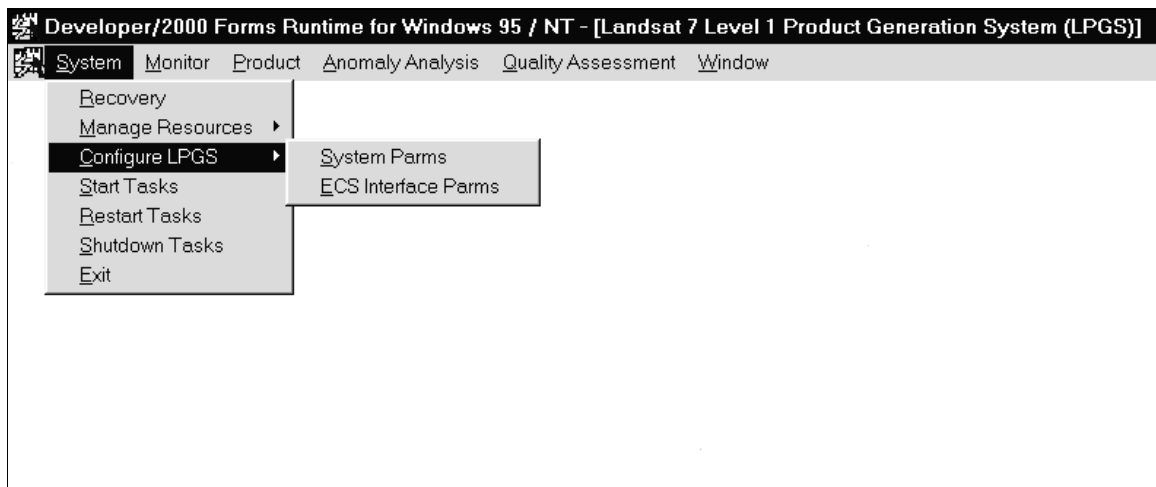
### 10.2.3 Configure LPGS

Selecting this option brings up a submenu with two options to display/modify system level parameters—System Parameters or ECS Interface Parameters (Figure 10-5).

### 10.2.3.1 System Parameters

Selecting this option brings up the Set Up LPGS Configuration Parameters screen (Figure 10-6). This screen displays and allows operator modification of a series of configuration parameters that control the operation of the LPGS. If any of the information on the screen is modified or added the user must use the OK button to update the database or the CANCEL button to leave the database unmodified.

# DRAFT



**Figure 10-5. Configure LPGS Menu**

System Monitor Product Anomaly Analysis Quality Assessment

SET UP LPGS CONFIGURATION PARAMETERS

RAID First Advisory Limit	65	%
RAID Second Advisory Limit	85	%
Max Concurrent Work Orders	5	
Work Order Scheduler Interval	101	sec
Work Order Controller Interval	300	sec
Resource Monitor Interval	300	sec
Deletion Interval	300	sec
Check Disk Interval	300	sec
PSI Polling Interval	300	sec
File Transfer Polling Interval	100	sec
DAN Polling Interval	10	sec

OK CANCEL

Count: \*1 <Insert>

**Figure 10-6. System Parameters Form**

## DRAFT

### 10.2.3.2 ECS I/F Parameters

Selecting this option brings up the ECS Interface Parameters screen (Figure 10-7). This screen displays the information necessary for FTP and TCP access to the ECS server and location information where LPGS is to look for User Request Files (URF). The directory paths for placement of protocol files on the LPGS and ECS are displayed. Additionally, the time increments for polling the protocol files are displayed. If any of the information on the screen is modified or added the user must use the COMMIT button to update the database or the CANCEL button to leave the database unmodified.

**ECS INTERFACE PARAMETERS**

**URF\_LOCATION**

Address

Host Name

Password

User Id

Def Target Path

**PDR\_LOCATION**

Address

Host Name

Password

User Id

Def Target Path

**TCP\_PARAMETERS**

Address

Host Name

Password

User Id

SOCKET\_NUMBER

**BCS\_POLL\_DIRECTORY(DAA/TDN)**

Address

Host Name

Password

User Id

Def Target Path

**LPGS\_POLL\_DIRECTORY(DAN/DDA)**

Address

Host Name

Password

User Id

Def Target Path

**COMMIT** **CANCEL**

Count: 0 <insert>

**Figure 10-7. ECS Interface Parameters Form**

### 10.2.4 Start Tasks

Selecting this option brings up the Start LPGS Background Tasks screen (Figure 10-8). Clicking the START button will activate all LPGS background tasks and is used for cold starts. The CANCEL button bypasses this operation.



The screenshot shows a software interface window. At the top is a menu bar with the following items: System, Monitor, Product, Anomaly Analysis, and Quality Assessment. The main content area of the window has the text "START LPGS" centered at the top. Below this text are two rectangular buttons: "START" on the left and "CANCEL" on the right. At the bottom of the window is a status bar. On the left side of the status bar, it says "Count: \*0". On the right side, it says "<Insert>".

**Figure 10-8. Start Background Tasks Form**

### 10.2.5 Restart Tasks

Selecting this option brings up the Restart LPGS Background Tasks screen (Figure 10-9). This screen lists the background tasks which are designed to remain active during LPGS processing. If for some reason one of these tasks exits, the operator can select it and restart it to bring the LPGS back to full functionality. To perform the operation, select the OK button, to bypass the operation select the CANCEL button.

### 10.2.6 Shutdown Tasks

Selecting this option brings up the LPGS Shut Down screen (Figure 10-10). The operator has the choice of allowing the background tasks to complete current processing (graceful) or aborting current processing and exiting immediately (immediate). This command affects the background tasks—the UI remains active. To perform the operation, select the OK button, to bypass the operation select the CANCEL button.

### 10.2.7 Exit

Selecting this option causes the UI to shut down.

## 10.3 Monitor Menu

The Monitor Menu (Figure 10-11) contains commands to view reports and logs of LPGS activity.

## DRAFT

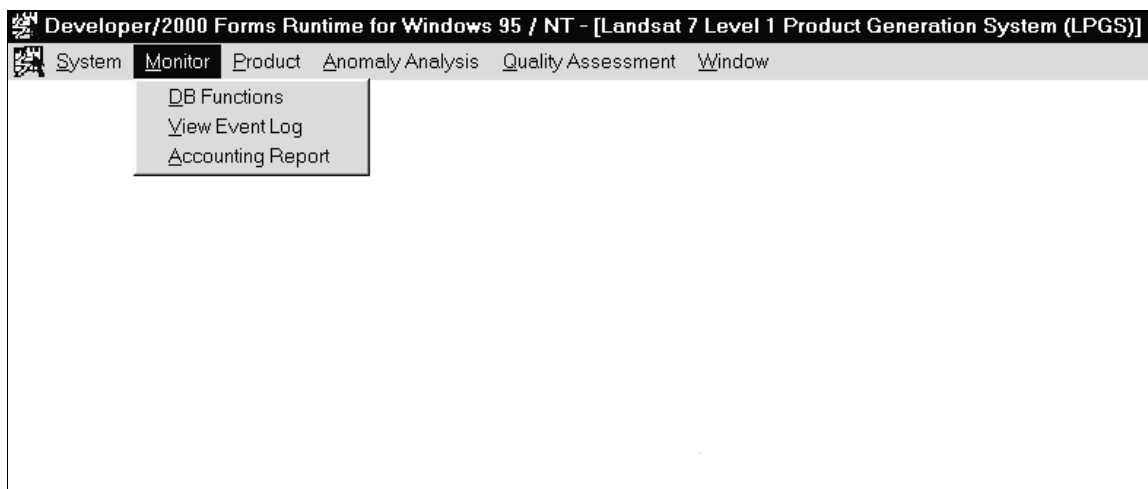
System	Monitor	Product	Anomaly Analysis	Quality Assessment
<h3>RESTART LPGS BACKGROUND TASKS</h3> <ul style="list-style-type: none"><li><input type="checkbox"/> PWS (work order scheduler)</li><li><input type="checkbox"/> DIE (interface with ECS)</li><li><input type="checkbox"/> DIL (ingest LOR product)</li><li><input type="checkbox"/> DGR (generate report)</li><li><input type="checkbox"/> DXL (transmit to ECS)</li><li><input type="checkbox"/> DRM (resource manager)</li></ul> <div><input type="button" value="OK"/> <input type="button" value="CANCEL"/></div>				
Count: *0 <span style="float: right;">&lt;Insert&gt;</span>				

*Figure 10-9. Restart Background Tasks Form*

System	Monitor	Product	Anomaly Analysis	Quality Assessment
<h3>LPGS SHUT DOWN</h3> <div><input checked="" type="radio"/> Gracefully (processing will complete)</div> <div><input type="radio"/> Immediate (processing will be aborted)</div> <div><input type="button" value="OK"/> <input type="button" value="CANCEL"/></div>				
Count: *0 <span style="float: right;">&lt;Insert&gt;</span>				

*Figure 10-10. Shutdown Background Tasks Form*

## DRAFT



**Figure 10-11. Monitor Menu**

### 10.3.1 DB Functions

Selecting this option allows the user to execute *ad hoc* queries of the database. It invokes the Oracle product SQL\*Plus and allows the operator to manipulate database objects to which the operator has been granted access.

### 10.3.2 View Event Log

Selecting this option displays the Events Log window (Figure 10-12) which contains informational, alert, and alarm messages from the background tasks. Since the event log window is active by default the user would only need to use this command if the event log was specifically closed by the user. The operator can filter the output by time, work order, product request, or program. Default is by time.

### 10.3.3 Processing Statistics Report

Selecting this option brings up the Processing Statistics Report screen (Figure 10-13). This screen reports the overall activity and throughput of the LPGS for the recent week, month, and year. This report can be printed using the PRINT button. When finished with this display, the EXIT button returns the UI to the main menu.

## 10.4 Product Menu

The Product menu contains commands that focus on Product Requests (Figure 10-14).

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[illegible]

**Figure 10-12. Events Log Form**

PROCESSING STATISTICS REPORT			
Activity	Average daily activity during the most recent		
	Week	Month	Year
Product Requests Received	XX.X	XX.X	XX.X
Scene Equivalents Received From ECS	XX.X	XX.X	XX.X
Anomalies Encountered	X.X	X.X	X.X
Trouble Tickets Received	X.X	X.X	X.X
Failed Product Requests	X.X	X.X	X.X
Cancelled Product Requests	X.X	X.X	X.X
L1R Products Generated (exclusive of L1G products)	XX.X	XX.X	XX.X
L1G Products Generated (includes L1R processing)	XX.X	XX.X	XX.X
Total Products Generated	XX.X	XX.X	XX.X

Count: \*0      <insert>

Figure 10-13. Processing Statistics Report

Developer/2000 Forms Runtime for Windows 95 / NT - [Landsat 7 Level 1 Product Generation System (LPGS)]

System Monitor **Product** Anomaly Analysis Quality Assessment Window

- Promote
- L0 Receipt
- Info
- Cancel
- Work Order** ▶
  - Resume
  - Pause
  - Promote
  - Info

Figure 10-14. Product and Work Order Menus

## DRAFT

### 10.4.1 Promote Product Request

Selecting this option brings up the Promote Product Request screen (Figure 10-15). The user is asked to supply the ID of the Product Request that is to be promoted. The operator may enter the ID manually or select it from a list. To perform the operation, select the COMMIT button, to bypass the operation select the RETURN button.



The form is titled "Promote Product Request" and is part of a menu system with options: System, Monitor, Product, Anomaly Analysis, and Quality Assessment. The form contains two input fields: "Product Request" with sub-labels "ID" and "Version", and "Product Request State". Below these fields are two buttons: "COMMIT" and "RETURN". At the bottom of the form, it displays "Count: \*0" and "<Insert>".

	ID	Version
Product Request	<input type="text"/>	<input type="text"/>
Product Request State	<input type="text"/>	

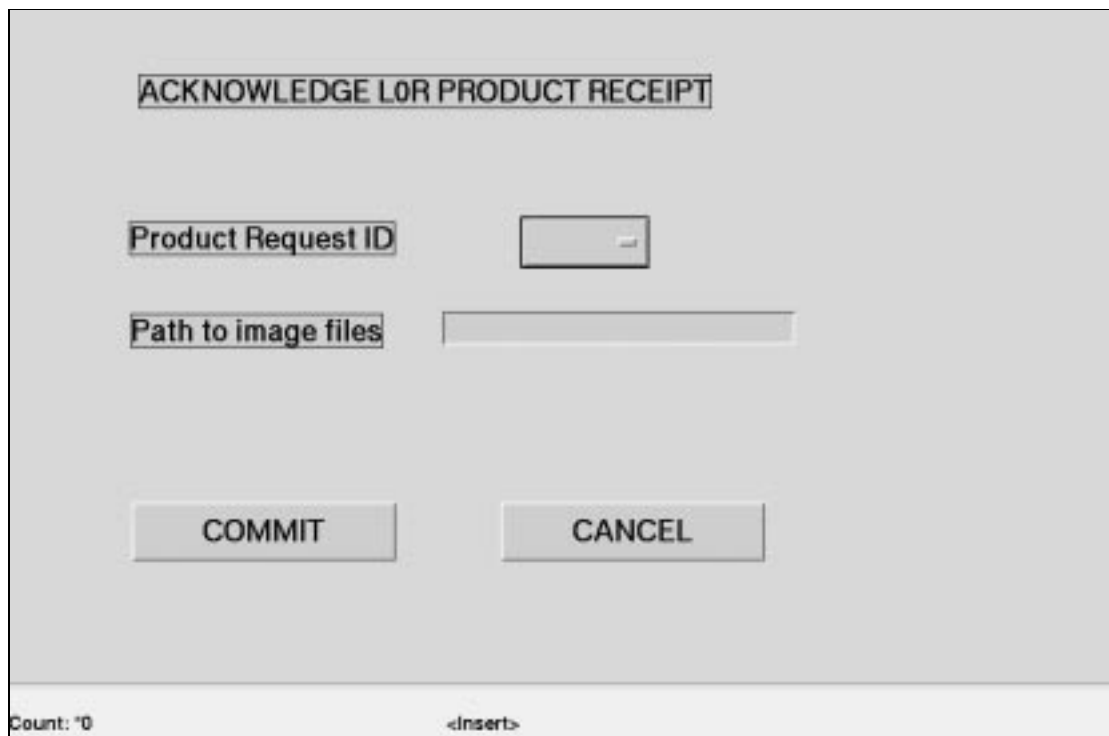
Count: \*0 <Insert>

**Figure 10-15. Promote Product Request Form**

## DRAFT

### 10.4.2 Acknowledge LOR Product Receipt

Selecting this option brings up the Acknowledge LOR Product Receipt screen (Figure 10-16). This screen provides the capability to acknowledge the presence, on LPGS mass storage, of LOR image files associated with an existing Product Request and have the Product Request entered into the LPGS processing queue. The operator provides, or selects from a list, the Product Request ID to be used in this operation. The operator also provides a fully qualified path to the image files to be used. If the files are not found, an error response is displayed to the screen allowing the operator to reenter the values. To perform the operation, select the COMMIT button, to bypass the operation select the CANCEL button.



The screenshot shows a graphical user interface for the 'ACKNOWLEDGE LOR PRODUCT RECEIPT' screen. At the top, the title is displayed in a rectangular box. Below the title, there are two input fields: 'Product Request ID' with a small dropdown arrow on its right, and 'Path to image files' with a standard text input box. At the bottom of the form area, there are two buttons: 'COMMIT' on the left and 'CANCEL' on the right. A status bar at the very bottom of the window shows 'Count: 10' on the left and '<insert>' on the right.

**Figure 10-16. Acknowledge LOR Product Form**

### 10.4.3 Product Request Information

Selecting this option brings up the Product Request Information screen (Figure 10-17). This display provides detailed information about all the Product Requests active in the system. It also provides information about the work orders associated with each Product Request.

### 10.4.4 Cancel Product Request

Selecting this option brings up the Cancel Product Request screen (Figure 10-18). The operator selects a product request to cancel from a list of product requests that have not completed. Once

## DRAFT

WINDOW0

System Monitor Product Anomaly Analysis Quality Assessment

**Product Request Information**

Product Request Information

Product Req ID	State	Del Flag	L0 Path

Work Orders

WO ID	Proc Id	Script Id	State	L1 Path

DETAIL SCRIPT STATUS FILTER CANCEL

Count: \*0 <Insert>

**Figure 10-17. Product Request Information Form**

the selection has been made, the product request's status is automatically filled in. The operator presses the COMMIT button to have the Product Request's processing canceled or the RETURN button to exit the form without performing the function.

### 10.4.5 Work Order Menu

Selecting this option brings up the Work Order submenu with options that focus on individual work orders (Figure 10-14).



<u>S</u> ystem	<u>M</u> onitor	<u>P</u> roduct	<u>A</u> nomaly Analysis	<u>Q</u> uality Assessment												
<b>Cancel Product Request</b>																
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"><table><tr><td></td><td style="text-align: center;">ID</td><td style="text-align: center;">Version</td></tr><tr><td>Product Request</td><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td>Product Request State</td><td colspan="2"><input type="text"/></td></tr><tr><td colspan="3" style="text-align: center;"><div style="display: flex; justify-content: space-around; margin-top: 20px;"><div>COMMIT</div><div>RETURN</div></div></td></tr></table></div>						ID	Version	Product Request	<input type="text"/>	<input type="text"/>	Product Request State	<input type="text"/>		<div style="display: flex; justify-content: space-around; margin-top: 20px;"><div>COMMIT</div><div>RETURN</div></div>		
	ID	Version														
Product Request	<input type="text"/>	<input type="text"/>														
Product Request State	<input type="text"/>															
<div style="display: flex; justify-content: space-around; margin-top: 20px;"><div>COMMIT</div><div>RETURN</div></div>																
Count: *0 <span style="float: right;">&lt;Insert&gt;</span>																

**Figure 10-18. Cancel Product Request Form**

#### 10.4.5.1 Resume Work Order

Selecting this option brings up the Resume Work Order screen (Figure 10-19). The operator selects a work order to resume from a list of paused work orders. Once the selection has been made, the work order's product request id and request type are automatically filled in. If the operator then presses the COMMIT button, work order processing will continue. If the RETURN button is pressed instead, the form will exit without performing the function.

<u>S</u> ystem	<u>M</u> onitor	<u>P</u> roduct	<u>A</u> nomaly Analysis	<u>Q</u> uality Assessment
<b>Resume Work Order</b>				
WORK_ORDERS				
	ID	Type		
Work Order	<input type="text"/>	<input type="text"/>		
	ID	Version		
Product Request	<input type="text"/>	<input type="text"/>		
<input type="button" value="COMMIT"/>		<input type="button" value="RETURN"/>		
Count: *0 <span style="float: right;">&lt;Insert&gt;</span>				

**Figure 10-19. Resume Work Order Form**

#### 10.4.5.2 Pause Work Order

Selecting this option brings up the Pause Work Order screen (Figure 10-20). The operator selects a work order to pause from a list of work orders whose L1 processing has not yet completed. Once a selection is made, the current script entry (if the work order is currently running) and all scripts in the selected work order that remain to be executed are displayed. Note that pauses can be set or unset only on the currently executing script of the work order or on subsequent scripts.

## DRAFT

<u>S</u> ystem	<u>M</u> onitor	<u>P</u> roduct	<u>A</u> nomaly Analysis	<u>Q</u> uality Assessment
<b>Pause Work Order</b>				
Work Order	ID	Type		
	<input type="text"/>	<input type="text"/>		
<input type="button" value="Clear All"/> <input type="button" value="Pause All"/> <input type="button" value="Select Pause"/>				
Current Script	Step	ID	Pause	
	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	
<b>Pending Scripts</b>				
	Step	Script Id	Pause	
<input type="button" value="▲"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	
<input type="button" value="▼"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	
<input type="button" value="▲"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	
<input type="button" value="▼"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	
<input type="button" value="COMMIT"/> <input type="button" value="EXIT"/>				
Count: *0		<Insert>		

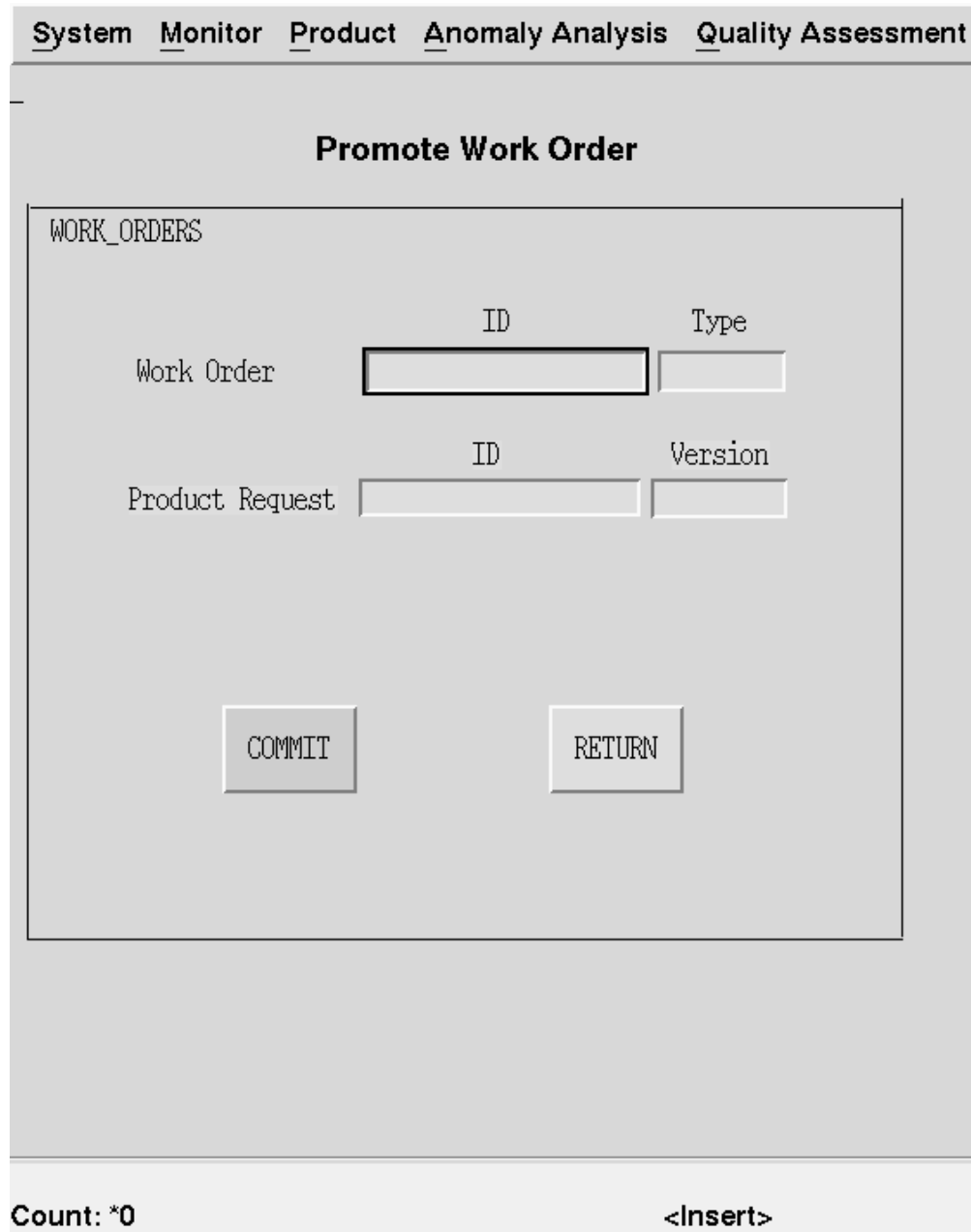
**Figure 10-20. Pause Work Order Form**

Earlier scripts cannot be set by this form. The operator then specifies whether to clear all pauses, set pauses, or select individual pauses. If the operator selects the individual pauses option, he/she will be able to set or unset pauses for any or none of the displayed scripts. Pressing the COMMIT button causes the desired changes to the pause flags to be recorded. If the EXIT button is pressed, the form exits without making any changes.

## DRAFT

### 10.4.5.3 Promote Work Order

Selecting this option brings up the Promote Work Order screen (Figure 10-21). The operator selects a work order to promote from the list of work orders, or manually enters one. If the operator then presses the COMMIT button, the promoted work order will be added to the promoted work order list displayed at the bottom of the screen. The RETURN button exits the form.



The form is titled "Promote Work Order" and is part of a system with tabs for System, Monitor, Product, Anomaly Analysis, and Quality Assessment. It contains two input sections: "Work Order" with fields for ID and Type, and "Product Request" with fields for ID and Version. At the bottom of the form are two buttons: "COMMIT" and "RETURN". Below the form, the status "Count: \*0" is displayed on the left and "<Insert>" on the right.

Promote Work Order			
WORK_ORDERS			
	ID	Type	
Work Order	<input type="text"/>	<input type="text"/>	
	ID	Version	
Product Request	<input type="text"/>	<input type="text"/>	
<input type="button" value="COMMIT"/>		<input type="button" value="RETURN"/>	
Count: *0			
<Insert>			

**Figure 10-21. Promote Work Order Form**

## DRAFT

### 10.4.5.4 Work Order Information

Selecting this option brings up the Work Order Information screen (Figure 10-22). The status of any LPGS work order can be displayed using this form. When the form is first opened, all existing 'incomplete' work orders are listed where 'incomplete' means the last work order associated with an incomplete product request. The operator uses the FILTER button to filter that list by time or request type. When a particular work order is selected by the operator, the paths to the LOR data and the L1 data for that work order are shown and buttons to access script status (SCRIPT STATUS), script parameters (SCRIPT PARAMETERS), global parameters or additional information associated with the Work Orders (WO ITEMS) become accessible.

Work Order Id	DAAC Prod Id	Procedure Id	Script Id	State
120		L1GL Product		A
130		L1GL Product		A
146		L1GL Product		A
181		L1GL Product		H
183		Geodetic Accuracy		A
206		Geodetic Accuracy		P

Parameters for the selected work order:

WO Path:

LOR Path:

Count: 6    v    <insert>

**Figure 10-22. Work Order Information Form**

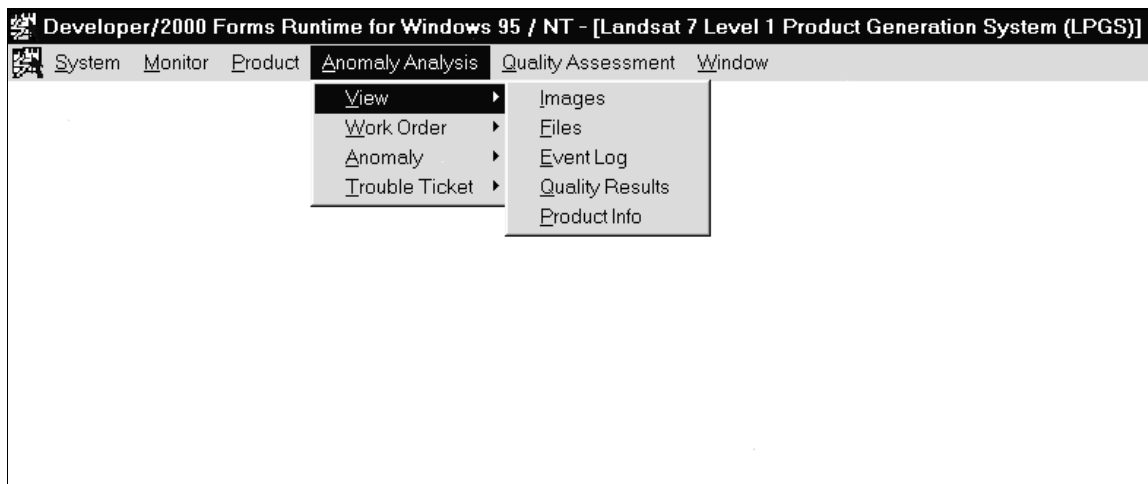
## 10.5 Anomaly Analysis Menu

The Anomaly Analysis menu (Figure 10-23) provides commands that an analyst uses to view and manipulate images, as well as Product Request/Work Order Information. This analysis and manipulation is done in response to failure conditions encountered by the automatic processing or the receipt of a trouble ticket.

## DRAFT

### 10.5.1 View Menu

Selecting this option brings up a submenu to select the type of file/information to be viewed on the screen (Figure 10-23).



**Figure 10-23. Anomaly Analysis and View Menus**

#### 10.5.1.1 Images

Selecting this option brings up the View Image screen (Figure 10-24). The analyst enters the anomaly ID directly or chooses from a list. The system completes the Product Request ID and Trouble Ticket ID if one is associated with the anomaly. The Analyst selects the type of image to be displayed (L0R, L1R, L1G, Final) and the system responds with location information. The Analyst presses the DISPLAY/PRINT button to bring up a COTS product in a separate window to hold the displayed image, and optionally print the image. The EXIT button exits the form.

#### 10.5.1.2 Files

Selecting this option brings up the View File screen (Figure 10-25). The analyst specifies the work order whose ASCII files are to be examined from a list of halted work orders. The directories associated with the work order are then displayed. The analyst selects a particular directory, the ASCII files in that directory will be displayed. A text editor will be brought up in its own window when the analyst presses the DISPLAY button. The window containing the form will remain. The analyst can then transfer the directory and file information from the form to the editor window to display the appropriate files. The PRINT button sends the file to an attached printer. The EXIT button exits the form.

#### 10.5.1.3 Event Log

Selecting this option brings up the Events Log Display. This display is identical to Monitor/View Event Log (Figure 10-12).

## DRAFT

System Monitor Product Anomaly Analysis Quality Assessment

**View Image**

Anomaly ID  TT ID

Product Request ID

Selectable Image:

◆ L0R L0 Path

◆ L1R L1 Path

◆ L1G

◆ Final ◆ Returned

Product Type  Output Format

Image Directory

Count: \*0 <Insert>

**Figure 10-24. View Image Form**

### 10.5.1.4 Quality Results

This screen is identical to the Quality Assessment/View Results screen.

### 10.5.1.5 Product Info

This screen is identical to the Product Request/Information screen (Figure 10-17).

## 10.5.2 Work Order Menu

Selecting this option brings up a submenu to select actions that apply to AAS generated Work Orders (Figure 10-26).

<u>S</u> ystem	<u>M</u> onitor	<u>P</u> roduct	<u>A</u> nomaly Analysis	<u>Q</u> uality Assessment
<b>View File</b>				
WORK_ORDERS				
	ID	Type		
Work Order	<input type="text"/>	<input type="text"/>		
Directories	<input type="text"/>			
File Names	<input type="text"/>			
<input type="button" value="DISPLAY"/> <input type="button" value="PRINT"/> <input type="button" value="EXIT"/>				
Count: *0 <span style="float: right;">&lt;Insert&gt;</span>				

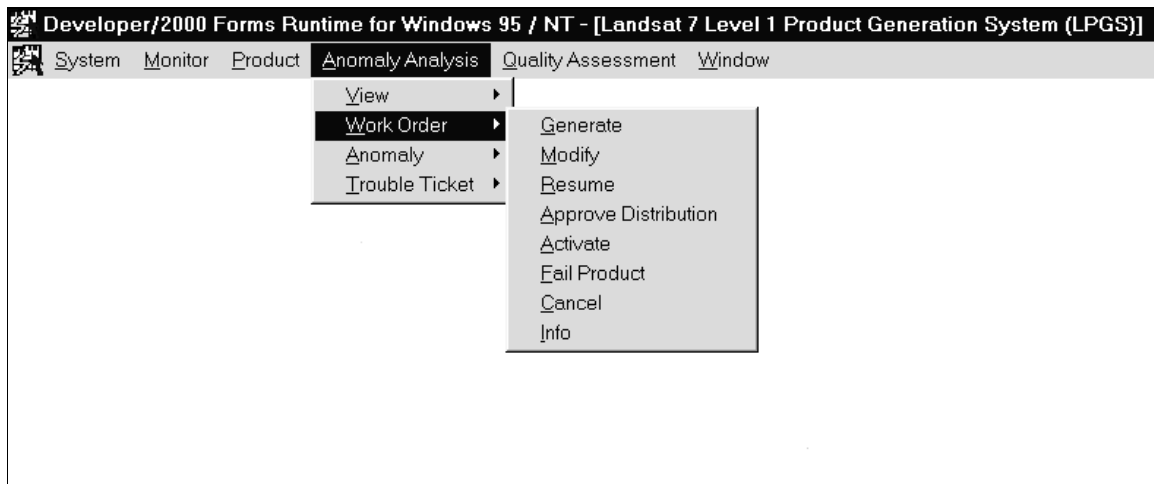
**Figure 10-25. View File Form**

#### 10.5.2.1 Generate

Selecting this option brings up the Create New Work Order screen (Figure 10-27). The analyst selects the anomaly (Product Request) for which a work order is to be generated. The form displays the last work order processed for the selected anomaly and allows the analyst to select that or another work order from the same product request as a template for the new work order. The analyst then selects the request type for the new work order and a procedure from a list of procedures based on the request type. Procedures associated with diagnostic, benchmark, and rerun work orders will normally differ because of differences in the distribution of pauses



## DRAFT



**Figure 10-26. Anomaly Analysis Work Order Menu**

The screenshot shows the 'CREATE WORK ORDER' form. The title bar reads 'System Monitor Product Anomaly Analysis Quality Assessment'. The form is divided into two main sections: 'WORK ORDER ITEMS' and 'WORK ORDER SCRIPTS'.  
  
In the 'WORK ORDER ITEMS' section, there are fields for 'Old Work Order Id' (containing '551'), 'Date Entered', 'Product Request ID', 'Request Type' (with radio buttons for Diagnostic, Benchmark, and Rerun), 'Procedure ID' (with a 'POST' button), and 'WO Path'.  
  
In the 'WORK ORDER SCRIPTS' section, there is a table with columns 'Script Id' and 'Count'. The 'Script Id' column contains three empty rows, each with a 'Pause' checkbox. The 'Count' column contains one empty row.  
  
At the bottom of the form, there are three buttons: 'Modify Params', 'OK', and 'CANCEL'. The status bar at the bottom shows 'Count: \*0' and '<Insert>'.

**Figure 10-27. Create Work Order Form**

## DRAFT

associated with the scripts. When the analyst presses the OK button a new work order based on the information entered is created and a new work order id is automatically assigned and displayed. The analyst modifies the pauses and/or parameters associated with the new work order using the MODIFY button. The CANCEL button exits the form without creating a new work order.

### 10.5.2.2 Modify

Selecting this option brings up the Modify Work Order screen (Figure 10-28). The analyst selects the work order to be modified from a list of the current work orders associated with

**System Monitor Product Anomaly Analysis Quality Assessment**

**MODIFY WORK ORDER**

**WORK ORDER ITEMS**

Work Order Id:  Request Type: ☒ Diagnostic  
☐ Benchmark  
☐ Rerun

Product Request ID:   
Procedure Id:   
WO Path:

**WORK ORDER SCRIPTS**

Script Id	State	Com	Failure Reason
<input type="text"/>	<input type="checkbox"/> Pause	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="checkbox"/> Pause	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="checkbox"/> Pause	<input type="text"/>	<input type="text"/>

**Modify Params OK CANCEL**

FRM-40350: Query caused no records to be retrieved.  
Count: \*0 <Insert>

**Figure 10-28. Modify Work Order Form**

## DRAFT

active anomalies (Product Request). The anomaly ID, the script id, and pauses for each script in the work order are displayed. The analyst uses the available buttons to set or reset any of the displayed pauses. To modify the script parameters, the analyst presses the MODIFY PARAMS button. This brings up a new screen based on the previously selected work order that lists the scripts associated with that work order (Figure 10-29). Selecting a particular script causes the current values of the parameters associated with that script to be displayed. The analyst modifies the value of any of the parameters before pressing the OK button to save the changes to the parameters. The CANCEL button returns to the Modify Work Order screen. The analyst presses the OK button to save the changes or the CANCEL button to exit the form.

System Monitor Product Anomaly Analysis Quality Assessment

**MODIFY WORK ORDER PARAMETERS**

Work Order Id:

Procedure Id:

Script Id

Parameter list for the selected Script

Parm Name	Element	Parm Value
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

OK CANCEL

Count: \*0 <Insert>

**Figure 10-29. Modify Work Order Parameters Form**

## DRAFT

### 10.5.2.3 Resume

Selecting this option brings up the Resume Work Order screen (Figure 10-19). This function is identical to the Resume function available to the LPGS operator under Product/Work Order menu except that only AAS-generated work orders can be selected here.

### 10.5.2.4 Approve Distribution

Selecting this option brings up the Approve Distribution screen (Figure 10-30). The analyst selects the work order for which an approval response is required from a list of AAS-generated work orders that have halted after completing processing. Pressing the COMMIT button causes the state of the product request associated with the work order to be set to SHIPPABLE. The RETURN button exits the form.

System Monitor Product Anomaly Analysis Quality Assessment

**Approve Product for Distribution**

ANOMALIES

	ID	Origin
Anomaly	<input type="text"/>	<input type="text"/>

	ID	Type
Current Work Order	<input type="text"/>	<input type="text"/>

	ID	Version
Product Request	<input type="text"/>	<input type="text"/>

Count: \*0 <Insert>

**Figure 10-30. Approve Distribution Form**

## DRAFT

### 10.5.2.5 Activate

Selecting this option brings up the Activate Work Order screen (Figure 10-31). The analyst first selects the work order to be activated from a list of AAS-generated work orders. The form then shows the product request associated with the selected work order. The analyst presses the COMMIT button to set the state of the product request associated with the work order to PENDING. The RETURN button exits the form.

System Monitor Product Anomaly Analysis  
Quality Assessment

**Activate Work Order**

WORK\_ORDERS

Work Order	ID	Type
	<input type="text"/>	<input type="text"/>
Product Request	ID	Version
	<input type="text"/>	<input type="text"/>

COMMIT RETURN

Count: \*0 <Insert>

**Figure 10-31. Activate Work Order Form**

### 10.5.2.6 Fail Product

Selecting this option brings up the Fail Product screen (Figure 10-32). The analyst selects the product request to be failed from a list of product requests whose current work orders have

## DRAFT

<u>S</u> ystem	<u>M</u> onitor	<u>P</u> roduct	<u>A</u> nomaly Analysis	<u>Q</u> uality Assessment
<b>Fail Product</b>				
ANOMALIES				
	ID	Origin		
Anomaly	<input type="text"/>	<input type="text"/>		
	ID	Type		
Current Work Order	<input type="text"/>	<input type="text"/>		
	ID	Version		
Product Request	<input type="text"/>	<input type="text"/>		
<input type="button" value="COMMIT"/>		<input type="button" value="RETURN"/>		
Count: *0 <span style="float: right;">&lt;Insert&gt;</span>				

**Figure 10-32. Fail Product Form**

failed. The COPY TO TAPE button allows the form to copy the LOR and intermediate files to tape. The analyst presses the COMMIT button to have the state of the product request set to FAILED. The RETURN button exits the form.

### 10.5.2.7 Cancel

Selecting this option brings up the Cancel Work Order screen (Figure 10-33). The analyst selects the work order to be canceled from a list of AAS-generated work orders. The currently executing script or the next script to be executed for the selected work order, and the product request ID associated with the work order are displayed. If a script is executing, the analyst selects whether to cancel immediately or at the end of the executing script. If a script is not executing only immediate cancellation is possible. The analyst selects the COMMIT key to invoke cancellation or RETURN key to bypass this operation.

## DRAFT

<u>S</u> ystem <u>M</u> onitor <u>P</u> roduct <u>A</u> nomaly Analysis <u>Q</u> uality Assessment					
<b>Cancel Work Order</b>					
WORK_ORDERS					
Work Order	<table><tr><td>ID</td><td>Type</td></tr><tr><td><input type="text"/></td><td><input type="text"/></td></tr></table>	ID	Type	<input type="text"/>	<input type="text"/>
ID	Type				
<input type="text"/>	<input type="text"/>				
Current Script	<table><tr><td>ID</td><td>Step</td></tr><tr><td><input type="text"/></td><td><input type="text"/></td></tr></table>	ID	Step	<input type="text"/>	<input type="text"/>
ID	Step				
<input type="text"/>	<input type="text"/>				
Product Request	<table><tr><td>ID</td><td>Version</td></tr><tr><td><input type="text"/></td><td><input type="text"/></td></tr></table>	ID	Version	<input type="text"/>	<input type="text"/>
ID	Version				
<input type="text"/>	<input type="text"/>				
Cancel When?	<p><input type="checkbox"/> At end of current script</p> <p><input type="checkbox"/> Immediately</p>				
<table><tr><td>COMMIT</td><td>RETURN</td></tr></table>		COMMIT	RETURN		
COMMIT	RETURN				
Count: *0 <span style="float: right;">&lt;Insert&gt;</span>					

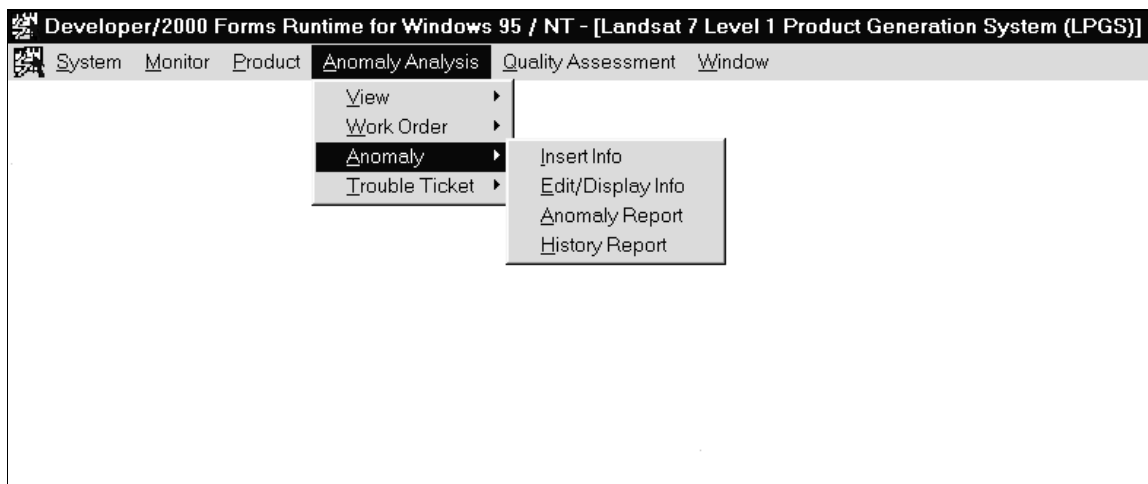
**Figure 10-33. Cancel Work Order Form**

### 10.5.2.8 Info

Selecting this option brings up the Work Order Information screen. This screen is identical to Product Request/Work Order Information (Figure 10-22).

### 10.5.3 Anomaly Menu

Selecting this option brings up a submenu to select actions that apply to Anomalies (Figure 10-34).



**Figure 10-34. Anomaly Analysis - Anomaly Menu**

### 10.5.3.1 Insert Info

Selecting this option brings up the Enter New Anomaly screen (Figure 10-35). Anomalies can arise from internal processing or received Trouble Tickets and affect the use of the fields of this screen. The operator defines the source of the anomaly in the ORIGIN field as either a Trouble Ticket or internal. If the source is a Trouble Ticket, the Trouble Ticket ID and Original Product Request ID are entered. If the anomaly is internal, the operator selects the Product Request from a list of Product Requests displayed. The Current Work Order information is displayed based on Product Request selected. The operator then completes the Description, and optionally the Resolution fields. The COMMIT button creates the record based on entered information; the CLEAR button clears the screen of entered information; and, the EXIT button bypasses the operation.

### 10.5.3.2 Edit/Display Info

Selecting this option brings up the View/Edit Anomaly screen (Figure 10-36). To edit an existing anomaly, the analyst presses the ENTER QUERY button. The analyst enters search information (which can be partial information) in one or more of the available fields. The analyst presses the EXECUTE QUERY button to select the matching set of anomalies. The analyst navigates to the desired entry using the NEXT/PREVIOUS buttons. The fields can be edited by the Analyst. Pressing the COMMIT button will save all changes to the Anomalies table. Pressing the CLEAR button returns the form to its initial state canceling the effect of the ENTER QUERY or EXECUTE QUERY buttons. Pressing the CLOSE button changes the status of the anomaly to CLOSED. The EXIT button exits the form without performing any action.



## DRAFT

<u>S</u> ystem	<u>M</u> onitor	<u>P</u> roduct	<u>A</u> nomaly Analysis	<u>Q</u> uality Assessment
<b>Enter New Anomaly</b>				
ANOMALIES				
Anomaly ID	<input type="text"/>	Date Entered	<input type="text"/>	
Origin	<input type="text"/>	Trouble Ticket ID	<input type="text"/>	
Original Product Request	<input type="text"/>			
	ID	Type	State	
Current Work Order	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Description	<input type="text"/>			
Resolution	<input type="text"/>			
<input type="button" value="COMMIT"/>		<input type="button" value="CLEAR"/>		<input type="button" value="EXIT"/>
Count: *0				
<Insert>				

**Figure 10-35. Enter New Anomaly Form**

## DRAFT

<u>S</u> ystem <u>M</u> onitor <u>P</u> roduct <u>A</u> nomaly Analysis <u>Q</u> uality Assessment			
<b>View/Edit/Close Anomaly</b>			
ANOMALIES			
Filter by	<input checked="" type="checkbox"/> Time	<input type="checkbox"/> Origin	<input type="checkbox"/> Status <input type="checkbox"/> Unresolved
	<input type="text"/>	<input type="text"/>	<input type="text"/>
Anomaly ID	<input type="text"/>	Date Entered	<input type="text"/>
Product Request	<input type="text"/>	Origin	<input type="text"/>
Trouble Ticket ID	<input type="text"/>	Status	<input type="text"/>
Original Product Request	<input type="text"/>		
	ID	Type	State
Current Work Order	<input type="text"/>	<input type="text"/>	<input type="text"/>
Description	<input type="text"/>		
Resolution	<input type="text"/>		
<input type="button" value="Enter Query"/>	<input type="button" value="Execute Query"/>	<input type="button" value="Next Record"/>	<input type="button" value="Previous Record"/>
<input type="button" value="COMMIT"/>	<input type="button" value="CLEAR"/>	<input type="button" value="EXIT"/>	<input type="button" value="CLOSE"/>

Count: \*0                      <Insert>

**Figure 10-36. View/Edit Anomaly Form**

### 10.5.3.3 Anomaly Report

Selecting this option brings up the Anomaly Report screen (Figure 10-37). The analyst filters the information by time, origin, or status. Default is by time. Pressing the DISPLAY button displays the filtered set of anomalies. The PRINT button allows the display to be printed. The DETAIL button displays detailed description and resolution information for the selected anomaly. The EXIT button exits the original database form.

**DRAFT**

System

Monitor

Product

Anomaly Analysis

Quality Assessment

Anomaly Report

ANOMALIES

Filter by:

Time Range

Origin

Status

Refresh Rate

Sort by:

Anomaly ID

Prod Req ID

Resolution Date

Anomaly ID	Origin	Trouble Ticket ID	New Product Request ID	Original Product Request ID	Work Order Type	State	Anomaly Status

DISPLAY

PRINT

REFRESH

DETAIL

EXIT

Count: \*0

<Insert>

**Figure 10-37. Anomaly Report**

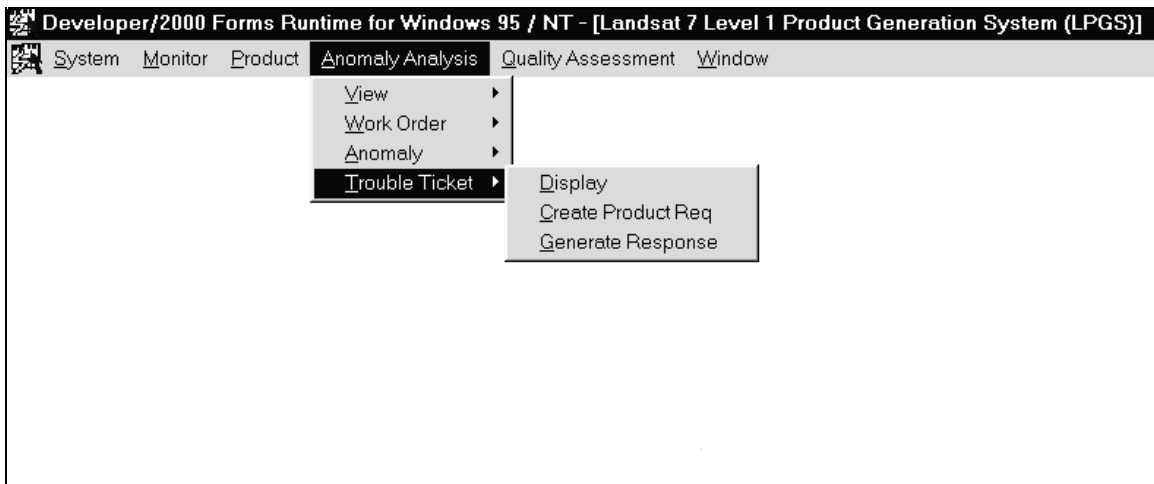
### 10.5.4 Trouble Ticket Menu

Selecting this option brings up a submenu to select actions that apply to Trouble Tickets (Figure 10-38).

### 10.5.4.1 Display

Selecting this option brings up the Trouble Ticket Display screen (Figure 10-39) which accesses the Remedy system.

## DRAFT



**Figure 10-38. Anomaly Analysis Trouble Ticket Menu**

### Form TDB

**Figure 10-39. Trouble Ticket Display Screen**

#### 10.5.4.2 Create Product Request

Selecting this option brings up the Create/Edit Product Request screen (Figure 10-40). This screen provides the capability to generate a product request for anomalies associated with Trouble Tickets. The Analyst can directly enter the Anomaly ID or choose from a list. The system completes the screen based on information from the original Product Request. The Analyst can modify the values displayed before pressing the COMMIT button to create the Product Request. The EXIT button exits the form without performing any action.

#### 10.5.4.3 Generate Response

Selecting this option brings up the Generate Response screen (Figure 10-41). Pressing the XMIT button brings up the REMEDY system in a separate window leaving the original window open so that the analyst can cut anomaly information from it and paste it into the appropriate REMEDY form. The analyst can obtain more detailed information about a specific trouble ticket by selecting the appropriate anomaly id. The EXIT button exits the original database form.

### 10.6 Quality Assessment Menu

This menu provides commands to view/print images and reports, and approve/disapprove the results of automatic processing (Figure 10-42).

## DRAFT

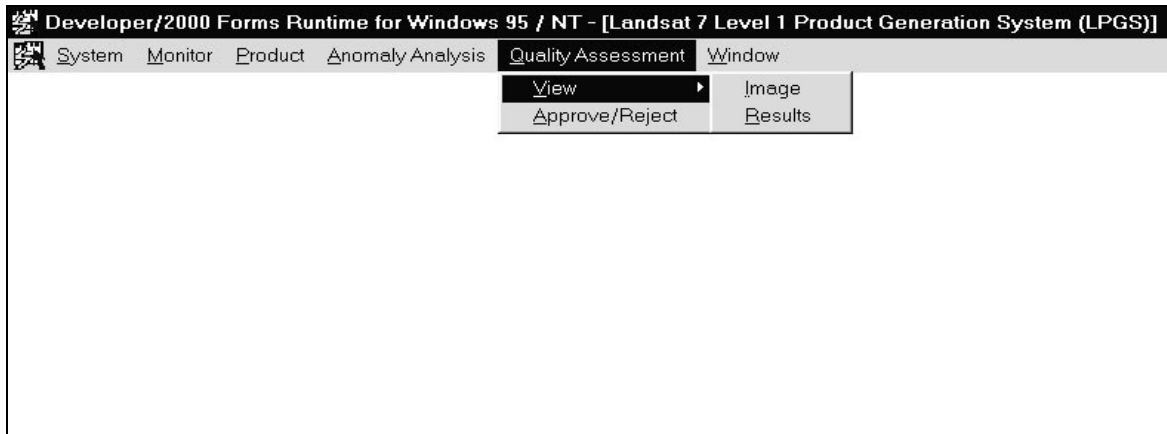
<u>S</u> ystem	<u>M</u> onitor	<u>P</u> roduct	<u>A</u> nomaly Analysis	<u>Q</u> uality Assessment
<b>Create/Edit Product Request</b>				
ANOMALIES				
Select Anomaly	Anomaly ID	Trouble Ticket ID	Prod Req ID	Version
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
		<input type="text" value="LOV"/>		
Product Type	<input type="text"/>	Band Combination	<input type="text"/>	
Calibration Method	<input type="text"/>	Output Format	<input type="text"/>	
Map Projection	<input type="text"/>	Map Pojection Params	<input type="text"/>	
Orientation	<input type="text"/>	Universal Reference	<input type="text"/>	
Pan Grid Cell Size	<input type="text"/>	Reflective Grid Cell Size	<input type="text"/>	
Thermal Grid Cell Size	<input type="text"/>	Resampling Option	<input type="text"/>	
Scan Line Start	<input type="text"/>	Scan Line End	<input type="text"/>	
Ellipsoid	<input type="text"/>	Datum	<input type="text"/>	
<input type="button" value="COMMIT"/>		<input type="button" value="EXIT"/>		
Count: *0				
<Insert>				

**Figure 10-40. Create New Product Request Form**

**Form TBD**

**Figure 10-41. Generate Trouble Ticket Response Form**

## DRAFT



**Figure 10-42. Quality Assessment Menu and View Submenu**

### 10.6.1 View

Selecting this option brings up a submenu to select images or results for viewing (Figure 10-42).

#### 10.6.1.1 View Image

Selecting this option brings up the View Image Screen (Figure 10-43). The COUNTER field represents the number of products requiring visual Quality Assessment. This field is refreshed at a rate specified in the REFRESH RATE field. The Refresh Rate field is modifiable by the Analyst. The Analyst selects a work order for viewing by entering an ID or selecting from the presented list. The remainder of the screen is filled by the system based on the Work Order ID.

The DISPLAY/PRINT button brings up a COTS product in a separate window for viewing the image and, optionally, printing it. The analyst transfers the file/directory information into the display screen for viewing. The REFRESH button updates the COUNTER field when pressed and the EXIT button exits this form.

#### 10.6.1.2 View Results

Selecting this option brings up the View Results Screens (Figures 10-44 and 10-45).

### 10.6.2 Operator Approval

Selecting this option brings up a submenu for selecting the image to be approved/disapproved from a list of available products. Once selected, a screen is presented for the operator to make a choice of actions (Figure 10-TBD).

## DRAFT

<u>S</u> ystem <u>M</u> onitor <u>P</u> roduct <u>A</u> nomaly Analysis <u>Q</u> uality Assessment			
<b>View Image</b>			
Work Order ID	<input type="text"/>	LOV	Refresh Rate <input type="text"/>
Product Request ID	<input type="text"/>		Counter <input type="text"/>
Last Accessible Image:			
◇ L1R	L1 Path <input type="text"/>		
◇ L1G			
◇ Final	Product Type <input type="text"/>	Output Format	<input type="text"/>
	Product Delivery Directory	<input type="text"/>	
DISPLAY/PRINT		REFRESH	EXIT
Count: *0 <span style="float: right;">&lt;Insert&gt;</span>			

**Figure 10-43. Quality Assessment View Image Screen**

# DRAFT

LPGS Quality Analysis Subsystem Operator Report				
Work Order Number: Product Request Number: Scan Date: DD_MM_YY		Requested Date: DD_MM_YY Customer Name Customer Address Customer Address		
NAME	MEASURED VALUE	EXPECTED VALUE	ACCEPTABLE VALUES	Flag for Out of Bounds
Dropped Lines	N integer		N < Y integers	
Detector Saturation	N %		N < Y %	
Random Noise:				
Expected Value (EV)	N integer	N integer	X < N < Y integers	*
Standard Dev. from EV	N real	N real	X < N < Y real	
Histogram Analysis				
Expected Value (EV)	N integer	N integer	X < N < Y integers	
Standard Dev. from EV	N real	N real	X < N < Y real	
Detector Calibration:				
Detector Number	N integer		N/A	
Gain	N integer		X < N < Y integers	
Bias	N integer		X < N < Y integers	
Temperature Values	Present/ Not Present	Present	Present	

Page: 1 of 2

**Figure 10-44. View Results Screen (Page 1)**



# DRAFT

LPGS Quality Analysis Subsystem Operator Report				
Work Order Number: Product Request Number: Scan Date: DD_MM_YY		Requested Date: DD_MM_YY Customer Name Customer Address Customer Address		
NAME	MEASURED VALUE	EXPECTED VALUE	ACCEPTABLE VALUES	Flag for Out of Bounds
EOSAT Quality Numbers Scan Start Time Scan Stop Time	N integer HH_MM_SS HH_MM_SS		X < N < Y	
Page: 2 of 2				

**Figure 10-45. View Results Screen (Page 2)**

## Appendix A. LPGS Error Messages

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### A.1 Introduction

The LPGS error messages are cataloged and may be reviewed by the operator/analyst. The text of each error message appears along with the message's severity code and a description of the error's cause.

Oracle server messages can be found in Reference 1, Oracle forms messages can be found in Reference 2, and Oracle reports messages can be found in Reference 3.

### A.2 Message Format

This section of the appendix will describe the components of LPGS messages. The messages and format are TBD.

## Appendix B. LPGS Directory Structure and Filename Formats

---

This appendix describes the structure of the directories on the LPGS containing files of interest for LPGS processing and the formats for LPGS filenames.

### **B.1 Processing Request Directory Structure**

TBD

### **B.2 Data Filename Format**

TBD

## Appendix C. Process Catalog and Man Pages

---

This appendix describes the function of each LPGS software process. Descriptions are ordered by process name. The list includes not only LPGS application software processes but also system software processes that have a significant role in performing LPGS functions. The list does not include Forms 4.5 executables or interpreter scripts (such as those used by awk).

Each process is accompanied by an indication of whether or not it can be invoked as a standalone program from an IRIX shell. Further information on LPGS standalone programs can be found in Appendix E. Each standalone program has a man page. The man page may be evoked from the IRIX shell as follows:

```
% man deletefile
```

If desired, a copy of the man page may be piped into an American Standard Code for Information Interchange (ASCII) file with the aman command as follows:

```
% aman deletefile > deletefile.asc
```

Process Name	Standalone?	Description

## Appendix D. Customizing Your Environment

---

Normally you will not need to manipulate environment elements directly. The LPGS TBD file will automatically set up an environment (see Section 2.3). This appendix explains what environment variables are important for LPGS operations and how to customize their values, should that be necessary. Specifically, this appendix covers the following topics:

- Setting up to use a different LPGS software version
- Customizing environment variables within a particular version
- LPGS-specific environment variables
- Oracle environment variables
- Shell environment variables

### D.1 Setting Up To Use a Different LPGS Software Version

TBD

### D.2 Customizing Environment Variables Within a Particular Version

TBD

### D.3 LPGS-Specific Environment Variables

This section of the appendix will define and describe any environment variables that are specific to the LPGS. The environment variables are TBD (Table D-1).

**Table D-1. LPGS Environment Variables**

Environment Variable	Description

### D.4 Oracle Environment Variables

The LPGS software assumes that environment variables required by the Oracle DBMS have been correctly defined. Table D-2 lists the Oracle environment variables required for the LPGS software.

For a detailed discussion of Oracle environment settings, consult *TBD Oracle Reference Document* (Reference TBD).

## DRAFT

**Table D-2. Oracle Environment Variables for LPGS Software**

Environment Variable	Description
FORMS45_PATH	Path name of directory containing LPGS GUI Forms executables. Normally set to \$LPGS_HOME/bin
ORACLE_HOME	Path name of top-level directory of the ORACLE installation containing the bin, lib, guicommon, and formsXX subdirectories
ORACLE_PATH	List of directories containing executables; similar to the UNIX PATH variable
ORACLE_SID	Name of database instance to which LPGS software will connect
ORACLE_TERM	Terminal type
TK2_TERMINAL	Terminal characteristics file
TWO_TASK	Identifies the name of a remote database if applications are running as clients. TWO_TASK is normally left unset

### D.5 Shell Environment Variables

The LPGS software makes use of the standard shell environment variables listed in Table D-3.

**Table D-3. Shell Environment Variables**

Environment Variable	Description
PATH	List of directories in which the shell will search for executables [see csh(1) for details of its operation]. PATH should include both \$LPGS_HOME/bin and \$ORACLE_HOME/bin
MAN_PATH	List of directories containing man pages [see man(1) for details of its operation]. MAN_PATH should include \$LPGS_HOME/man for LPGS man pages and appropriate directories in \$ORACLE_HOME for ORACLE man pages
DISPLAY	Address of X Window System display. DISPLAY should be set to "Address:0" where Address is the IP name or IP address of the X display device (X terminal or workstation)
LD_LIBRARY_PATH	Lists additional directories containing dynamic shared objects. The list should include the default directories (/lib & /usr/lib), as well as directories for ORACLE shared objects (consult Reference 9)

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## **Appendix E. Performing LPGS Functions Through IRIX**

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This appendix will describe those LPGS functions that are performed using IRIX. The functions, if any, are TBD.

## DRAFT

# Abbreviations and Acronyms

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AA	anomaly analysis
AAS	Anomaly Analysis Subsystem
AAUI	AAS analyst user interface
AIT	Algorithm Implementation Team
API	applications programmatic interface
ASCII	American Standard Code for Information Interchange
AUI	analyst user interface
CASE	computer-aided software engineering
CCR	configuration change request
CD-ROM	compact disc read-only memory
CDE	Oracle Corporation's Cooperative Development Environment
CDS	critical design specification
CNMOS	Consolidated Network and Mission Operations Support
COTS	commercial off-the-shelf
CPF	calibration parameter file
CPU	central processing unit
CRB	Central Review Board
DAAC	Distributed Active Archive Center
DAT	digital audio tape
DBAR	Database Access Routine
DBMS	Database Management System
DCN	document change notice
DD	data dictionary
DDE	data dictionary entry
DFD	data flow diagram
DFL	DMS Format L1 Product
DGR	DMS Generate Reports
DHF	Data Handling Facility



## DRAFT

DIE	DMS IF With ECS
DIL	DMS Ingest L0R Product
DMS	Data Management Subsystem
DPL	DMS Process L0R Product
DRM	DMS Resource Manager
DSI	delivered source instructions
DSS	data server subsystem
DXL	DMS Xmit L1 Product
E&A	evaluation and analysis
ECS	EOSDIS Core System
EDC	EROS Data Center
EGS	EOS Ground System
EOS	Earth Observing System
EOSAT	Earth Observation Satellite Company
EOSDIS	EOS Data and Information System
ERD	entity relationship diagram
EROS	Earth Resources Observation System
ESDIS	Earth Science Data and Information System
ETM+	Enhanced Thematic Mapper Plus
F&PRS	functional and performance requirements specification
FAST	Fast Argonne System for Transport; an output format for L1 digital images
FDDI	fiber-optic data distribution interface
FIFO	first in, first out
ftp	file transfer protocol
GB	gigabyte
GCP	ground control point
GDS	ground data system
GeoTIFF	Geographic Tag(ged) Image File Format; an output format for L1 digital images

## DRAFT

GPS	Geometric Processing Subsystem
GSFC	Goddard Space Flight Center
GUI	graphical user interface
HDF	Hierarchical Data Format
HWC	hardware component
HWCI	hardware configuration item
I&T	integration and test
I/O	input/output
IAS	Image Assessment System
IC	internal calibrator
ICD	interface control document
IDD	interface data descriptions
IDL	Interactive Data Language
IGS	international ground station
IRD	interface requirements document
ISO	International Standards Organization
L0R	Level 0 radiometrically corrected
L1	Level 1
L1G	Level 1 geometrically corrected
L1R	Level 1 radiometrically corrected
LAN	local area network
Landsat	Land Satellite
LGN	Landsat Ground Network
LGS	Landsat 7 Ground Station
LPGS	Level 1 Product Generation System
LPS	Landsat 7 Processing System
M	meter
M-Specs	module specifications
MB	megabyte
Mbps	megabits per second

## DRAFT

MBps	megabytes per second
MIPS	million instructions per second
mm	millimeter
MMO	Mission Management Office
MO&DSD	Mission Operations and Data Systems Directorate
MO&SDD	Mission Operations and Systems Development Division
MOC	Mission Operations Center
MSCD	mirror scan correction data
MSS	management subsystem
MTF	modulation transfer function
MTPE	Mission to Planet Earth
MTTR	mean time to restore
NASA	National Aeronautics and Space Administration
NCSA	National Center for Supercomputing Applications
NFS	Network File System
NOAA	National Oceanic and Atmospheric Administration
ODL	Object Descriptive Language
OUI	operator user interface
P-Specs	process specifications
PC	personal computer
PCD	payload correction data
PCMB	Project Configuration Management Board
PCS	Process Control Subsystem
POSIX	portable operating system interface for UNIX
Prod Opr	production operator
PRQ	PCS Request Processor
PSO	Project Science Office
PWC	PCS Work Order Controller
PWG	PCS Work Order Generator
PWS	PCS Work Order Scheduler

## DRAFT

Q1G	L1G Quality Assessment (task)
Q1R	L1R Quality Assessment (task)
QA	quality assessment
QAS	Quality Assessment Subsystem
QUI	Quality Assessment User Interface (task)
RAID	redundant array of inexpensive devices
RAM	random access memory
RMA	reliability, maintainability, and availability
RPC	remote procedure call
RPS	Radiometric Processing Subsystem
RSI	Research Systems, Inc.
RTM	Requirements and Traceability Management (tool)
SAT	Shift Along Track
SCSI	small computer system interface
SDPS	science data processing segment
SDR	system design review
SDS	system design specification
SGI	Silicon Graphics, Inc.
SNR	signal-to-noise ratio
SQL	Structured Query Language
SRR	system requirements review
SSR	solid-state recorder
SWCI	software configuration item
Sys Opr	system operator
TBD	to be determined
TBR	to be resolved
TBS	to be supplied
TIFF	tagged image file format
URF	user request file
UI	user interface

## **DRAFT**

USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VME	Versa Module European
WO	work order
WRS	Worldwide Reference System

## DRAFT

# Glossary

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Enhanced Thematic Mapper Plus (ETM+)	The imaging instrument onboard Landsat 7.
Interval	The time duration between the start and stop of an imaging operation (observation) of the Landsat 7 ETM+ instrument.
IRIX	A version of the UNIX operating system running on the LPGS Origin 2000 and Indy workstations.
Level 0R (L0R) digital image	Spatially reformatted, demultiplexed, and unrectified subinterval data.
Level 0R (L0R) product	<p>The L0R digital image plus radiometric calibration, attitude, and ephemeris data, consisting of the following files:</p> <ul style="list-style-type: none"><li>• L0R digital image</li><li>• Internal calibrator (IC) data—Calibration data file containing all the calibration data received on a major frame basis for a given subinterval</li><li>• Mirror scan correction data (MSCD)—The scan direction and error information for a given subinterval</li><li>• Payload correction data (PCD)—Information on spacecraft attitude and ephemeris, including quality indicators for each subinterval</li><li>• Metadata—Descriptive information about the L1 digital image, names of appended files associated with the image, and quality and accounting information</li><li>• Calibration parameter file (CPF)—A formatted file containing gains, biases, and offsets for the instrument and detectors</li></ul>
Level 1G (L1G) digital image	Radiometrically corrected and resampled for geometric correction and registration to geographic map projections. Can be WRS-based or have a floating scene center but is restricted to one orbital path and must be generated from the same Level 0 acquisition interval.
Level 1G (L1G) product	L1 product packaged by LPGS and distributed by the ECS to the customer includes for all requested bands: Fast Argonne System for Transport (FAST) or Geographic Tagged Image File Format (GeoTIFF) format L1G image and associated data accommodated by the format; HDF format L1G image, metadata, CPF, and geolocation table.

## DRAFT

Level 1R (L1R) digital image	Radiometrically corrected but not geometrically resampled. Image size can be from .25 to 3 WRS scene equivalents. Can be WRS-based or have a floating scene center but is restricted to one orbital path and must be generated from the same L0 acquisition interval.
Level 1R (L1R) product	L1 product packaged by LPGS and distributed by the ECS to the customer includes for all requested bands: L1R image data, metadata including processing quality information, IC data file, CPF, combined PCD file, combined MSCD file, and geolocation table in hierarchical data format (HDF).
LPGS database	A persistent storage repository containing configuration elements that can be set, L1 processing parameters and quality assessment thresholds as well as information for data ingest, data processing, etc.
LPGS error log	An ASCII file containing all of the status and error messages generated by the LPGS software.
LPGS GUI	The LPGS graphical user interface that provides access to a LPGS function string. The LPGS GUI consists of a main menu from which LPGS commands can be selected, additional dialogs for providing parameters to the command, and confirmation dialogs to prevent accidental command execution.
Product generation request	<p>Request received from ECS directing LPGS to generate a specific L1R or L1G product. The product generation request includes:</p> <ul style="list-style-type: none"><li>• L0R subinterval identifier</li><li>• Start and stop scan lines</li><li>• Output product (L1R or L1G)</li><li>• Output format</li><li>• Band selection</li><li>• Map projection option and project parameters</li><li>• Grid cell size</li><li>• Resampling filter</li><li>• Orientation</li><li>• Calibration method</li></ul>

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Production quality assessment	Ancillary information collected and generated during L1 processing; provides information on the certainty with which corrections were made to images; nominally appended as a file to the L1 product.
SQL*Plus	The Oracle SQL interpreter.
Subinterval	Segment of time corresponding to a portion of an observation within a single Landsat 7 contact period.
User request file	See product generation request.
Worldwide Reference System (WRS) scene equivalent	Digital image that covers an area equivalent to one of the 57,784 scene centers (233 paths x 248 rows areas) defined by the WRS structure.
WRS Scene	A frame of imagery defined by the Worldwide Reference System. Each scene is defined as a swath of approximately 179 kilometers (163 kilometers plus 10 percent in-track overlap) centered on a position along the Landsat 7 satellite's track. The WRS assigns sequential path numbers to the satellite's 251 nominal orbit tracks. The WRS also defines 119 numbered latitudinal center lines, called rows, that intersect the paths (row 60 is at the equator). WRS scene centers are defined as the points of intersection of the path and row lines. The scenes are designated by the path and row number at the scene center.
xwsh	An IRIX program that provides an X window interface to a shell or to a specified application program.



## DRAFT

# References

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1. *Oracle 7 Server Messages and Codes Manual*, Release 7.1, Part No. A12379-2, May 1994
2. *Oracle Developer/2000 Forms 4.5 Messages and Codes Manual*, Part No. A32508-1, 1994
3. *Oracle Developer/2000 Reports 2.5 Messages and Codes Manual*, Part No. A32490-1, April 1995
4. *Oracle 7 for MIPS ABI Systems Installation and Configuration Guide*, Release 7.2, Part No. A36047-1, August 1995
5. *Oracle 7 Server SQL Reference*, Release 7.2, Part No. A20325-2, April 1995